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THE CO-OPERATIVE SCHOOL AREA IN KANSAS

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W. E. S.

FOREWORD

This bulletin has been prepared in the hope that it may prove helpful to those interested in providing better school opportunities than are now available in many of the rural communities throughout the state. It suggests methods of obtaining the advantages of consolidation without the sacrifice of original boundary lines.

We desire that the ideas presented may be the cause of beneficial readjustment among the local school units and thus pave the way for a much needed reorganization throughout the state. Present-day property valuations will not permit a rate of taxation sufficient to produce funds adequate to the needs of education under the present district plan of organization. We must, therefore, look for a different plan of organization and a more efficient system of taxation whereby sufficient funds may be secured in order that equal educational opportunities may be given to each and every boy and girl in Kansas irrespective of their several places of residence.

The information contained in this bulletin has been compiled and arranged by Superintendent W. E. Sheffer of the Manhattan, Kan., city schools. I am, therefore, deeply obligated to Superintendent Sheffer and others who have contributed of their time and labor to make this bulletin possible. I trust that it may serve the purpose for which it is intended and thus prove to be a profitable contribution.

W. T. Markham, *State Superintendent.*

TABLE OF CONTENTS

PAGE

I. THE PROBLEM STATED.......... 7
Legal Phases.......... 13
Summary.......... 14

II. THE STATUS OF PUBLIC EDUCATION IN KANSAS.......... 15
Summary.......... 21

III. CONSOLIDATION OF SCHOOLS.......... 22
Summary.......... 29

IV. RELATIVE ACHIEVEMENT OF PUPILS IN ONE-TEACHER AND GRADED SCHOOLS.......... 31
Summary.......... 45

V. DETERMINATION AND DIVISION OF COSTS.......... 46
Transportation.......... 46
Strictly Educational Costs.......... 56
Cost Determination When City Schools Become the Coöperative Schools.......... 60
Summary.......... 62

VI. DETERMINATION OF THE MAXIMUM ENROLLMENT FOR SCHOOLS EMPLOYING DIFFERENT NUMBERS OF TEACHERS.......... 63
Summary.......... 81

VII. SUMMARIZATION OF THE TECHNIQUES AND PROCEDURES REQUIRED FOR THE ORGANIZATION OF COÖPERATIVE SCHOOL AREAS AND THEIR APPLICATION TO THE DATA FOR SIXTY-FOUR COUNTIES, 82
Summarization for Atchison County.......... 88
Summary.......... 96

VIII. MODIFIED COÖPERATIVE SCHOOL AREA.......... 106

IX. SUMMARY AND RECOMMENDATIONS.......... 110
BIBLIOGRAPHY.......... 112
APPENDIX.......... 115

LIST OF TABLES

PAGE

I. Data Relating to Counties Included and Not Included in this Study.......... 11
II. Summarization of Medians, First Quartiles and Third Quartiles for Pertinent Data for Counties Included in the Study...... 11
III. Enrollments in One-teacher Schools in Kansas, 1932-1933 18
IV. Rate at Which One-teacher Schools Were Closed During the Period, 1918-1928.......... 24
V. Median Scores of Pupils in One- and Four-teacher Schools of New York, 1922, for Six Subjects in Grades 5 and 8........ 34
VI. Average Achievements of Indiana Fifth, Seventh, and Eighth-grade Pupils in Reading, Spelling, and Arithmetic in Terms of Grade Standards.......... 35

PAGE
VII. Achievement of White Pupils in Schools of Different Types in Arithmetic, Spelling, Reading, Handwriting, and Intelligence Scores in Virginia.......... 36
VIII. Number, Type, and Location of Kansas Elementary Schools.. 40
IX. Median Scores in Reading, Spelling, Arithmetic, Composition, and Handwriting in Different Types of Kansas Schools...... 41
X. Median or Mean Scores in Reading, Spelling, and Arithmetic, Median Intelligence Quotients, and Median Chronological Ages in Different Types of Riley County Schools........... 43
XI. Median Chronological and Mental Ages, Grade Placement, and Intelligence Quotients of the Pupils of Grades 3 to 8 Inclusive Included in the Riley County Study, as Shown by the McCall Multi-mental Tests.......... 44
XII. Per Mile Cost in Cents of Operating Ford Sedans and Coaches Operated by Vocational Agriculture Teachers.............. 48
XIII. Per Mile Cost in Cents of Operating Chevrolet Sedans and Coaches Operated by Vocational Agriculture Teachers...... 49
XIV. Per Mile Cost of Operating Automobiles by Agents of the Kansas State Board of Agriculture.......... 50
XV. Transportation Costs in Seven Consolidated School Districts of Kansas, 1928-1929.......... 51
XVI. Cost Items for Transporting Pupils in Fifteen Consolidated School Districts in Kansas During 1930-1931............... 53
XVII. Average Daily Attendance Recommended by Mort as the Basis of Equalization of Educational Costs for Kansas, Missouri, and Ohio.......... 65
XVIII. Enrollment of Pupils in Kansas Elementary Schools Employing Different Numbers of Teachers.......... 65
XIX. Average Daily Attendance of Pupils in Nebraska Elementary Schools Employing Different Numbers of Teachers......... 66
XX. Experience of Forty-five Kansas County Superintendents who Served as Jurors.......... 67
XXI. Experience of Thirty-one Superintendents of Graded School Systems who Served as Jurors.......... 68
XXII. Experience of Seventy-six Kansas County Superintendents and Superintendents of Graded School Systems of Kansas who Served as Jurors.......... 69
XXIII. Maximum Enrollment Recommended per Teacher with Different Grade Groupings by the County and City School Superintendents who Served as Jurors.................. 69
XXIV. Percentage of Total Enrollment for 1929-1930 Contained in Different Grade Groupings for Small Graded and One-teacher Kansas Schools.......... 71
XXV. Recommended Maximum Enrollment of Schools Employing Different Numbers of Teachers.......... 72
XXVI. Enrollment for Each Room as Determined by Median Juror and Method of Computation Employed in this Study........... 75
XXVII. Enrollments as Determined by Strict Application of the Jurors' Judgments and by Adjusting the Enrollments thus Determined.......... 76
XXVIII. Median Enrollments and Third Quartile Enrollments in Schools of Various Sizes, as Determined by the Directors of Teacher Training Work in Kansas.......... 78
XXIX. Average Daily Attendance and Enrollment of Schools of Different Sizes as Determined by Different Methods........... 80

PAGE
XXX. Significant Facts Relating to the Muscotah Coöperative School Area in Atchison County.... 84
XXXI. Significant Facts Relating to the Lancaster Coöperative School Area in Atchison County if an Additional Teacher were Employed.... 85
XXXII. Significant Facts Relating to the Atchison Coöperative School Area in Atchison County, a City School Being the Coöperative School.... 86
XXXIII. Significant Facts Relating to Other Coöperative School Areas in Atchison County, with No Additional Teachers Required.. 87
XXXIV. Significant Facts Relating to Coöperative School Areas which Could be Organized in the Counties Included in this Study.. 89
XXXV. Modified Coöperative School Areas in Barton County.... 107
XXXVI. Modified Coöperative School Areas in Riley County.... 109

LIST OF MAPS

I. Map of Kansas, Showing Counties.... 12
II. Kingman County, Kansas, School Districts.... 96
III. Mitchell County, Kansas, School Districts.... 97
IV. Riley County, Kansas, School Districts.... 98
V. Thomas County, Kansas, School Districts.... 99
VI. Atchison County, Kansas, School Districts.... 100
VII. Franklin County, Kansas, School Districts.... 101
VIII. Barton County, Kansas, School Districts.... 102
IX. Rice County, Kansas, School Districts.... 103
X. Scott County, Kansas, School Districts.... 104
XI. Neosho County, Kansas, School Districts.... 105

CHAPTER I

The Problem Stated

One thousand four one-teacher elementary schools with an average enrollment of five and a half pupils, and not one of them enrolling more than seven pupils, with a relatively high cost, a relatively low quality of education, and unutilized facilities exhibit an educational and economic anomaly and anachronism in the school system of Kansas. To develop a plan for eliminating a number of these small schools, for improving the education of farm boys and girls, and for reducing costs if possible is the purpose of this study. It is proposed to attempt to achieve these results by making more complete use of the facilities now available in graded schools.

The criteria proposed to determine the acceptability of any plan for increasing the size of the attendance unit and for reducing the number of one-teacher schools are as follows:

The plan should

1. Afford educational opportunities as good as or better than those now offered in all schools involved, with a reduction in costs.
2. Reduce present costs if the quality of education is not improved.
3. Improve the quality of education if costs are to remain the same.
4. Require no expenditure for new school plant.
5. Make a maximum use of present facilities.
6. Not involve the disorganization of any school district.
7. Not render the return to the one-teacher school difficult or impossible.
8. Be legally possible.

A superficial study of conditions in the one-teacher and smaller graded schools reveals the existence of many one-teacher schools with very small enrollments and a relatively large number of graded schools which are not serving an optimum maximum number of children. For the school year 1932-1933 there were 1,004 one-teacher schools with an enrollment of seven or fewer pupils, an average enrollment of but 5.49 pupils, and an average daily attendance of 4.39 pupils. During the same year not one of 2,243 one-teacher schools had more than ten pupils enrolled, and their average enrollment was only 7.4 pupils. For the school year 1930-1931[1] there were 47 two-teacher schools with an average enrollment per teacher of 20.7 pupils; 125 three-teacher schools with an average enrollment of 22 pupils per teacher; 165 four-teacher schools with an average enrollment of 24.3 pupils per teacher; 48 five-teacher schools with an average enrollment of 25.1 pupils per teacher; 30 six-teacher schools with an average enrollment of 24 pupils per teacher; 15 seven-teacher schools with an average enrollment of 26 pupils per teacher, and 37 eight-teacher schools with an average enrollment of 25.37 pupils per teacher. Since these numbers for enrollments represent the average, it is evident that many more pupils could have been accommodated by some of them if each teacher had been caring for an optimum maximum number. It is, moreover, known that in a number of two- or more teacher schools in 64 counties there were at least 116 vacant classrooms which could have accommodated an increased attendance.

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[1] Allen, George A., Jr. *Kansas Education Directory*, 1930-1931, pp. 15-40.

An additional significant factor conducive to an increase in the size of the attendance unit is the improved system of roads which is being developed and maintained by the state, counties, and townships. These roads would facilitate the transportation of pupils. On July 1, 1926, there were 1,000 miles of all-weather roads in the entire state; by July 1, 1930, this mileage had been increased to approximately 12,000 miles.[2]

It appears that it might be possible to close certain selected one-teacher schools and transport their pupils to those neighboring graded schools which could care for a larger enrollment. Such a procedure would result in the organization of what will be called, in this study, Coöperative School Areas, which are defined as areas consisting of one graded school district with one or more adjacent one-teacher districts whose pupils would be taught in the graded school for a payment made by the respective one-teacher district school boards to the graded school board. The graded school of the Coöperative School Area will be called, in this study, the Coöperative School. It is the purpose of the study to develop techniques and procedures for organizing such Coöperative Areas if possible. For the purpose of the study, only those one-teacher districts will be included whose school buildings are located within a radius of five miles from graded schools. Such areas would be formed by the members of a regular or called school meeting in a one-teacher district deciding not to maintain their one-teacher school and to have their children taught in the graded school of an adjoining district. After this action had been taken, the school board would proceed to make the necessary arrangements with the school board of the graded district.

The Coöperative School Area is to be clearly distinguished from a consolidated school district. A consolidated district in Kansas is formed by the organic union of two separate and independent school districts into a totally new and distinct school district with a legal identity of its own. One school is organized to accommodate the children who formerly attended the several separate schools included in the consolidation. The larger school may be housed in the building of one of the original districts, or an entirely new building may be erected. The consolidated school may provide elementary and high school education or elementary education only. The essential differences between the consolidated district and the Coöperative School Area are to be found, first, in the organization of the consolidated district under which organization the several original districts cease to exist; their identity as such is lost through absorption into the new district, and the several school boards, one for each separate district, are disbanded and their places taken by the new consolidated school district board. In the Coöperative School Area each district would retain its identity, and each school board would continue to function. Second, if it is legal to disorganize a consolidated school district, which has not yet been determined, the process required for disorganization is relatively difficult as compared with the simplicity of procedure which would be required for abandoning a Coöperative School Area type of organization. If the people of such an area should find it desirable to end the coöperative arrangement, a regular or special school meeting of any single district could return its district to the orginial plan as soon as the current contract with the other district or districts should expire. All that then would be required would be the employment of a teacher and the opening of the one-teacher school if it were a one-teacher district which should desire to return to the former plan, or simply not to admit children from the one-teacher district or districts if the graded school found a continuance of the coöperative system undesirable.

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[2] Seventh Biennial Report of the Kansas State Highway Commission, p. 217.

The advantages inherent in these possibilities are evident. When organizing a consolidated district the people of the original constituent districts take a step which may be irretraceable, or if retraceable great difficulty may be involved in returning to the original status. The consolidated school offers little or no opportunity for experimentation with the larger type of school and no possibility of easy return to the earlier status quo, while the Coöperative School Area plan offers an opportunity to experiment with the new system for as long or short a period as may be desired and the opportunity of returning to the original system. A second advantage of the Coöperative School Area is that it does not require a violent and sudden disruption of the people's loyalty to the "little one-room school" or a sharp break with an age-long tradition. A third difference that would usually be found between these two plans lies in the fact that consolidations have very frequently involved a relatively heavy expenditure for new plant facilities. Such expenditures would not occur in the organization of Coöperative School Areas because one of the major premises underlying the proposal is the more complete utilization of existent facilities.

An additional expenditure would not be required for equipment to accommodate the increased enrollment in the graded schools. This would be supplied by removing the equipment from the unused one-teacher buildings to the graded school. Such equipment could include seating and instructional apparatus and materials. A desirable increase in library facilities especially would be a natural outcome of this common pooling of materials and equipment.

The prosecution of the study to determine the feasibility of organizing Coöperative School Areas and their nature involves: a limited knowledge of the Kansas public school system; a brief study of the history of the consolidation of schools, especially as it relates to Kansas; the securing of pertinent and proper data; a study of the legal elements involved in the organization of Coöperative School Areas; the discovery of whether pupils would probably profit as largely or more largely in the coöperative school as in the separate schools whose districts would be included in the Coöperative School Area; the determination of the maximum enrollment which would be permitted in coöperative schools employing different numbers of teachers; the development of techniques for determining costs in individual Coöperative School Areas, and their division among the districts composing them; and the application of the techniques and procedures developed to the proper data in the organization of Coöperative School Areas in a number of counties.

The major part of the pertinent data was secured through a special report which the state superintendent of public instruction, George A. Allen, Jr., requested the county superintendents to prepare for the purpose of this study. The data requested were for the school year 1930-1931 because at the time the study was begun the information for this year was the latest available. Because the county superintendents do not have jurisdiction over the schools of first and second class cities, they supplied data for only the one-teacher and smaller graded schools, which included all graded schools except those of first- and second-class cities. A copy of the report blank is shown on page 116 of the appendix.

The county superintendents reported information for each of the small graded schools and each of the one-teacher schools located not more than five miles from the respective graded schools. This distance was arbitrarily determined. The information supplied related to: the number of schools of each type; the total daily attendance; the number of pupils enrolled in each school; the length of the school term; the average number of years of experience of the teachers in the graded schools; the number of years of experience of each of the teachers of the one-teacher schools; the average number of college hours of training of the teachers of the graded schools; the number of college hours of training of the teachers of the one-teacher schools; the salary of the teachers of the one-teacher schools; the average salary of the teachers of the graded schools; the total amount expended for the individual schools of each type; the amount expended for current expenses of the individual schools of each type; the amount expended for indebtedness for the individual schools of each type; the number of vacant rooms, if any, in the graded schools; and the total number of miles each one-teacher school, located within a radius of five miles of the graded school, is distant from it and the nature of the roads between the two schools.

Reports were requested from all county superintendents. Usable replies were received from 64 of the 105 of them. Not all of the 64 reports were complete, but they were sufficiently full to be used in part. They came from counties well distributed geographically, as reference to the map on page 12 will show. These counties are, also, reasonably representative of all the counties of the state, as shown by the data in Table I.

A summarization of the data for all the counties included in the study is presented in Table II.

Other data were secured from the biennial reports of state superintendents of Kansas, from certain school directories issued by them, from the biennial reports of the State Board of Agriculture, from the biennial reports of the State Highway Commission, from the tax-rate book of the League of Kansas Municipalities, and from other sources which will be given as reference is made to them in the study

TABLE I—Data relating to counties included and not included in this study

DATA.	First quartile.	Median.	Third quartile.
Number of schools[1]:			
One-teacher schools—			
Counties included	43.50	76.00	91.50
Counties not included	41.00	71.00	94.25
Small graded schools—			
Counties included	7.00	11.50	10.00
Counties not included	6.50	17.50	16.00
Average daily attendance per teacher:			
One-teacher schools[2]—			
Counties included	10.58	12.23	14.30
Counties not included	10.43	11.86	14.00
Small graded schools[3]—			
Counties included	18.07	20.32	22.84
Counties not included	18.41	21.30	22.95
Salaries of teachers (monthly):			
One-teacher schools[4]—			
Counties included:			
Men	$89.00	$96.00	$106.00
Women	84.00	91.00	99.00
Counties not included:			
Men	88.00	99.00	104.00
Women	85.00	91.00	97.00
Small graded schools[5]—			
Counties included:			
Men	112.00	120.00	129.00
Women	96.00	102.00	109.00
Counties not included:			
Men	118.00	127.00	132.00
Women	100.00	107.00	112.00
Density of population[6]:			
Counties included	9.50	17.66	34.29
Counties not included	8.12	14.50	27.75

[1] Twenty-seventh Biennial Report of the State Superintendent of Public Instruction of Kansas (1929-1930, pp. 306–309).

[2] Ibid., pp. 339–340.

[3] Ibid., pp. 341–344.

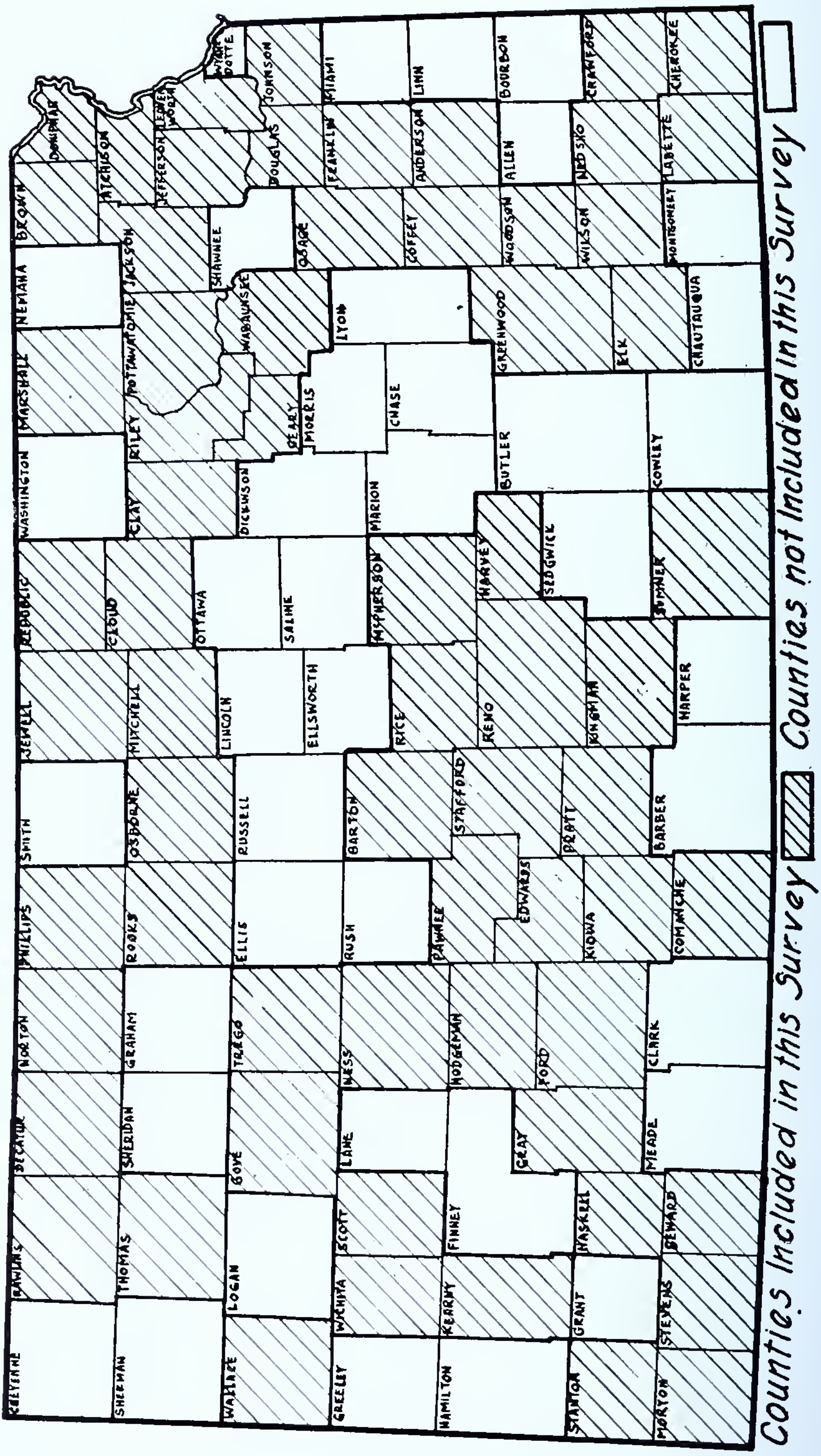
[4] Ibid., pp. 339–340.

[5] Ibid., pp. 341–344.

[6] Twenty-seventh Biennial Report, Kansas State Board of Agriculture, Volume XXXII, pp. 546–547.

TABLE II—Summarization of medians, first quartiles, and third quartiles for pertinent data for counties included in the study

DATA.	Graded schools.			One-teacher schools.		
	First quartile.	Median.	Third quartile.	First quartile.	Median.	Third quartile.
Length of term in months	9	9	9	8	8	8
Enrollment	50.3	83.0	139.0	10	14	19
Salary (annual)	$888	$959	$1,108	$647	$722	$796
Experience of teachers in years	4.0	6.56	8.07	1	2	5
Training in college hours	30.70	49.35	62.50	0	11.0	31.5
Distance from graded school in miles	....	....	....	3.0	3.5	4.5
Number of schools		393	....	....	1,534	....
Number of teachers		1,649	....	....	1,534	....



Map I—Map of Kansas Showing Counties

Legal Phases

The present school laws of the state permit the organization of Coöperative School Areas without serious difficulties being involved. The organization of such areas requires the action of the district board, the district meeting, and that arrangements be made between the contracting boards of education for the payment for instruction. The district boards of the one-teacher districts would provide transportation. The laws are very clear on each of these points, as is evidenced by the following statute:

> "In any school district, if in the judgment of the district board, the county superintendent of public instruction concurring, the number of children in said district shall not be sufficient to warrant the maintenance of a school in said district, the district, at the annual meeting or at a special meeting duly called for this purpose, may make provision for sending the children of such districts to the school or schools of some other district or districts and for the payment of the cost of tuition and the cost of transportation as herein provided. The district board shall provide for the transportation in a safe, comfortable and inclosed conveyance or conveyances, properly heated, of the pupils of said district who live two or more miles from the school to which they are sent; or, in lieu of furnishing the transportation, the district board may allow the parent or guardian of any pupil or pupils, as compensation for expenses, a sum not in excess of the amount which would otherwise be paid for the transportation of such pupils: *Provided,* That no such compensation shall be allowed unless such pupil or pupils actually attend the school designated by the district board and comply with the regulations which may be made by said board. For the payment of tuition, transportation, and other expenses herein provided, warrants shall be drawn by the clerk of the district board and paid by the treasurer in the manner approved by law: *Provided,* That such discontinuance of the school in said district shall not bar the district from its share of the state school fund, if said children are continued in the school or schools of other districts the full time required by law for the maintenance of schools of the districts."[3]

A later statute strengthens this one in regard to the provision for transportation. It states:

> "That the board of education of any city of the first or second class, or the school board of any school district, consolidated school district, rural high school district or community high school district shall have authority to use the public funds of such board of education or such school district for the purpose of transporting any grade or grades or any high school class or classes thereof to and from any school maintained by any other board of education or by any other district, under such rules and regulations as such board of education or school board may prescribe, upon agreement therefore between the board of education or school board desiring to transport such pupils and the board of education or school board of the school to which such pupils are to be transported."[4]

A later statute, however, restricts the application of the statute of paragraph 344 by limiting the length of the period during which a school may be closed to two consecutive years if the district adjoins another which maintains a graded school and a high school with a minimum course of two years. In such case, if the school is closed for more than two years in succession, the district must be disorganized and its territory attached to this adjacent district. The statute which controls provides that:

> "Whenever any school district shall have failed or neglected to maintain a school for at least seven months in each year for a period of three successive

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[3] Kansas School Laws, Revised 1931, paragraph 344, pp. 103-104.

[4] Ibid., paragraph 245, p. 74.

years, such school district shall be disorganized by the county superintendent of public instruction and the territory thereof shall be attached to adjoining district, as may be determined by the county superintendent: *Provided,* That this act shall not apply to any school district which shall have made provision according to law for sending its pupils to other schools and for the payment of adequate transportation and tuition, unless such district shall be adjacent to a school district maintaining a graded school in which is offered an approved high-school course of at least two years. Whenever any school district adjacent to a district maintaining a graded school in which is offered an approved high-school course of at least two years shall have failed or neglected to maintain a school for at least seven months in each year for a period of three consecutive years, said adjacent district shall be disorganized by the county superintendent of public instruction, and the territory thereof shall be attached to the district maintaining such graded school in which is offered an approved high-school course of at least two years, or to adjoining districts, in the discretion of the county superintendent: *Provided, further,* That where any such district is adjacent to a city of the third class in which there is maintained a high school or graded school, it shall be attached to the school district in which such city is located."[5]

It is clear, however, that a district which maintains a one-teacher school may discontinue its school for a period of two consecutive years and send its children to the school of an adjacent district which maintains a high school and graded school for two years without any legal difficulty ensuing. The superior advantages of the Coöperative School Area could be enjoyed for two years out of three. At the best, the legislature could be prevailed upon to remove the restriction. Since there does not appear to be any strong valid reason for the existence of this statute, the legislature should be easily induced to rescind its former action.

Summary

1. The Coöperative School Area has been proposed as a type of organization for reducing the number of one-teacher schools.
2. The sources of necessary data have been stated.
3. The nature of the information which must be presented, and the techniques and procedures which must be developed for organizing Coöperative School Areas have been stated.
4. The results of an examination of the statutes as they relate to the organization of a Coöperative School Area have been given.

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[5] Ibid., paragraph 309, pp. 91-92.

CHAPTER II

The Status of Public Education in Kansas

The Kansas public school system is organized with a state department of public instruction vested with a limited degree of administrative and supervisory power, a state board of education, a state school book commission, a state school fund commission, and a separate staff for vocational education in general control of the public schools. The state department of public instruction consists of a state superintendent of public instruction, an assistant superintendent, a secretary of the state board of education, two high-school inspectors, two rural-school inspectors, a statistician, a chief clerk, and seven clerks and stenographers. The state superintendent of public instruction is elected on a partisan ballot for a term of two years and receives a salary of $3,000 per annum for his services. No educational qualifications whatever are required of him.

The state board of education, which is also the board for vocational education, is composed of nine members, with the state superintendent of public instruction as its *ex officio* chairman. Such powers rest with the state board of education as the prescription of courses of study, the issuance of state teachers' certificates, the determination of rules for the accrediting of high schools, the accrediting of colleges and universities, the apportionment of federal vocational funds, and similar powers with which the legislature has vested it from time to time.

The state school book commission is composed of seven members, one of whom is the state superintendent of public instruction serving in an *ex officio* capacity. Its functions are the adoption of textbooks, providing for their purchase or printing, determining the price at which they shall be sold, and other matters relating to providing the schools with textbooks.

The state school fund commission consists of the secretary of state, the attorney-general, and the state superintendent of public instruction. Its duties primarily involve the "management and investment of the state permanent school, state normal school and state university funds." Certain aspects of vocational education are administered and supervised by the vocational education staff composed of three professional and two clerical workers.

A very limited degree of administrative and supervisory power over education in the 105 counties of the state is vested in the county superintendents, who are elected officials, for whom very limited legal qualifications are required, and whose salaries are inadequate. Very little assistance is provided for the county superintendents, which fact of itself would render it almost impossible for them to perform much more than the clerical and inspectorial duties which receive most of their consideration. Moreover, their effectiveness is limited by the circumscribed powers which the legislature has granted them.

The local organization of the school system belongs to the distinctively district type. Education is provided for the children of the state in 9,076 separate and distinct school districts. These include 11 first-class city school districts, 77 second-class city school districts, 1,302 districts employing two or more teachers not classified as first or second class city school districts, 7,359 one-teacher districts, 303 rural high-school districts, and 24 community high-school districts.[1] First-class city districts had a population of not less than 15,000, and second-class city districts had a population between 2,000 and 15,000 at the time of their organization. Two- or more-teacher districts include all schools employing two or more teachers which are not located in a city of the first or second class, and which are not community high schools. The schools in the city districts are administered by boards of education composed of six members unless the population is between 85,000 and 115,000, in which case the number of members of the board of education is twelve. These members, who serve for four-year terms, are elected at large by the people of their respective districts. In all other districts providing elementary education the members of the district school boards are elected for three-year terms by the people of the district assembled in the annual school meeting, which also decides other matters relating to the administration of the schools, such as the length of the term and the amount of the appropriation to be expended during the ensuing year. Including the members of community and rural high school boards, Kansas has 27,556 school-board members to direct the affairs of 9,076 school districts in which 20,178 teachers are employed.

This system, with its maximum of decentralization and of local control, is a direct heritage from frontier days. In its essential elements it varies but little from the type of organization which served the children of the earliest settlers. Its 7,359 one-teacher districts under the direction of 27,556 school-board members are the direct descendants of the first one-teacher schools. Terms are longer, the curriculum is more extensive, teachers are somewhat better prepared, buildings are more satisfactory, and equipment is more adequate than were found in the pioneer school; yet the conception of local control and local support which marked the first schools of the state is still basic in the present-day Kansas school system.

The frontier school met the needs of its generation rather satisfactorily. It evolved naturally from the conditions of life of the people whom it served. It is difficult to conceive of any other type of institution which would have been adapted to the conditions of early settlement. Population was sparse, distances were great, roads were but trails across the prairies, and transportation of school children over distances sufficiently great to gather enough together in one place to organize a graded school was practically impossible. It is difficult, however, to reconcile the continuance of this type of organization with modern knowledge of school administration and the progress which have marked the life of the state in almost every other aspect of social and political advancement. For in 1932 the one-teacher elementary school characterizes Kansas public education for rural children just as truly as it did fifty years before, although the inadequacy of the system was clearly realized by educational leaders a third of a century ago. In 1900 Frank Nelson, state superintendent of public instruction, stated in his biennial report that—

> "For some years the conviction has been growing in the minds of our educators that the rural school, organized as a one-room school, with all grades instructed by one teacher, is not doing all for the pupil that ought to be accomplished. When comparison is made with the graded school in the town or city, it is seen that the rural school pupil is at a disadvantage. Again, the length

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[1] Twenty-seventh Biennial Report of the State Superintendent of Public Instruction of Kansas, pp. 309, 354-356, 357, 360, 515-520.

of the term is often inadequate, averaging for the state only twenty-five and one-fourth weeks. This means that many of the districts of the state maintain a much shorter term than the average, often but twelve or sixteen weeks."[1]

E. T. Fairchild, state superintendent of public instruction in 1908, vigorously and feelingly called attention to the defects of this type of school when he reported that—

"The most pressing educational problem to-day is the rural school. . . . While all eyes have been turned to the high school, to the college, and to the university, it is feared that the welfare of the rural school has been sadly overlooked."[2]

After recording in detail several elements of weakness, including the inexperience and immaturity of the teachers, he stated that—

"These conditions, together with others that may be mentioned, are deplorable."[3]

The "deplorable" conditions which Fairchild lamented a quarter of a century ago evidently have not been remedied in the meantime, however, for in a circular letter to school officers dated December 9, 1931, George A. Allen, Jr., state superintendent of public instruction, gave forcible expression to the same kind of thinking in these words—

"What the outrageous, obsolete system of schools does to education in Kansas is beyond the reach of ordinary English. One is tempted to fling linguistic convention to the winds and indulge in the forceful vernacular of the early frontier."[4]

He also states in the same connection that—

"The economic conditions now current seem to have made no impression upon the very small one-teacher schools of the state. We have more of them than we had last year. We have at this time more than 1,000 rural schools with enrollments of seven or fewer pupils. It would seem to the thoughtful observer that this group of schools should be the subject of careful attention on the part of all citizens of the state."[5]

The increasing vigor of expression and the depth of emotion which characterize these condemnations of the one-teacher school over a period of a third of a century parallel the growing lack of justification for the continuance of many of these schools and the relative deterioration in the service which they have been rendering. With the passing of each year there has been less and less reason for the maintenance of many of them. When State Superintendent Fairchild wrote his biennial report for 1907-1908, the average enrollment in such schools was 22.6. For the school year 1929-1930 this number had declined to 15.22 with an average daily attendance of 12.63.[6] The condition relative to the enrollment in these schools during the school year 1932-1933 is exhibited in Table III.

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1. Twelfth Biennial Report of the State Superintendent of Public Instruction of Kansas (1899-1900), p. 22.

2. Sixteenth Biennial Report of the State Superintendent of Public Instruction of Kansas (1907-1908), p. 43.

3. Ibid., p. 43.

4. Allen, George A. Jr., State Superintendent of Public Instruction of Kansas. Circular Letter to School Officials under date of December 6, 1932.

5. Ibid.

6. Twenty-Seventh Biennial Report of the State Superintendent of Public Instruction of Kansas (1929-1930), p. 546.

TABLE III—Enrollments in one-teacher schools in Kansas,[7] 1932–1933

Number of pupils enrolled.	Number of schools.	Number of pupils enrolled.	Number of schools.
1	7	21	182
2	34	22	131
3	85	23	123
4	127	24	112
5	179	25	93
6	265	26	71
7	307	27	68
8	407	28	65
9	412	29	39
10	420	30	33
11	417	31	36
12	489	32	25
13	468	33	23
14	401	34	20
15	349	35	11
16	354	36	3
17	319	37	12
18	280	38	7
19	204	Over 38	19
20	247		

[7] Allen, George A. Jr., Op. Cit.

One thousand and four schools had enrollments of seven or fewer pupils. Their average enrollment was 5.45 pupils and their average daily attendance 4.39.* In 2,243 of these schools the enrollment was ten or fewer.[8] How great is the financial loss due to such low enrollments is evidenced by the fact that at least 28 pupils[9] may be taught satisfactorily in a one-teacher school. This low pupil-teacher ratio for 1932-1933 is not a temporary condition existing for just this one year. For at least almost a quarter of a century a constant and gradual decrease in the enrollment in the one-teacher schools has been occurring. For the school year 1906-1907 the average enrollment was 24.7, with an average daily attendance of 17.[10] During the same year 1,629 schools had an average daily attendance of 10 or fewer pupils.[11] Two hundred and eighty-six had an average daily attendance of 5 or fewer pupils. In 1910 the average enrollment was 23.1, with an average daily attendance of 16.1. By 1920 the average enrollment had declined to 18 and the average daily attendance to 13.[12] During the following ten years a further decline occurred, resulting in an average enrollment of 15.59 and an average daily attendance of 12.85 in 1929, and an average enrollment of 15.22, with an average daily attendance of 12.63 in 1930.[13] The decline continued into 1931, when the average enrollment was 12.[14]

With the constant decrease in enrollment in the one-teacher schools the total number of children attending them has decreased. In 1908 there were

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*NOTE: While the circular letter stated that this information is for 1932-1933, it is evidently for 1931-1932, because when issued December 6, 1932, the average daily attendance for 1932-1933 could not have been known.

[8] Ibid.

[9] See page 75 of this study.

[10] Sixteenth Biennial Report of the State Superintendent of Public Instruction of Kansas (1907-1908), p. 98.

[11] Ibid., p. 95.

[12] Twenty-second Biennial Report of the State Superintendent of Public Instruction of Kansas (1918-1920), p. 263.

[13] Twenty-seventh Biennial Report of the State Superintendent of Public Instruction of Kansas (1929-1930), p. 546.

[14] Allen, George A., Jr., State Superintendent of Public Instruction of Kansas. Circular Letter to School Officials under date of December 6, 1932.

187,893[15] pupils in attendance in these schools. In 1910 the number was 181,737. By 1920[16] the number had declined to 139,782. In 1930[17] only 108,719 pupils attended one-teacher schools. The average decrease during the period, 1908 to 1930, of pupils attending these schools was 3,599 per year. If for each decrease of 18.81 pupils in enrollment the approximate average enrollment per teacher for the period, one one-teacher school had been discontinued, the number of schools would have been reduced at the rate of 191 per year or 4,202 for the entire period. The number of active one-teacher schools actually decreased in number from 7,937[18] to 7,146[19] from 1908 to 1930, or by a total number of 791 schools.

One of the consequent results of the maintenance of so many small one-teacher schools is a relatively high per pupil cost even though the salaries of the teachers of these schools are relatively low in comparison with the salaries paid grade-school teachers. While teachers in the two- or more-teacher schools received salaries 27.6 to 34.4 per cent higher than those paid teachers of one-teacher schools, the per-pupil cost on the basis of average daily attendance in the one-teacher schools was $79.12 in comparison with a per-pupil cost of $77.31 in the two- or more-teacher schools.[19] Or, in other words, per-pupil costs in one-teacher schools are slightly higher for a term 9 per cent shorter.

As the lower paid teachers are found in the one-teacher schools, so the less experienced teachers are also employed in them. The total number of teachers employed in all Kansas public schools during 1929-1930 was 20,178, of whom 2,597[20] were inexperienced. Of the inexperienced teachers, 1,707 or 65.7 per cent were serving in the one-teacher schools. Since the total number of teachers employed in these schools was 7,172, 23.8 per cent of them had never taught before, while only 6.7 per cent of the 3,751 teachers employed in the elementary grades of the two- or more-teacher schools were inexperienced. But little progress has been made during almost a third of a century in supplying rural boys and girls with experienced teachers, for in 1902 the superintendent of public instruction, Frank Nelson,[20*] reported that 33⅓ per cent of the teachers in the one-teacher schools were inexperienced.

Not only are teachers of the one-teacher schools more poorly paid and less experienced than teachers in the elementary grades of the two- or more-teacher schools, but their training is less adequate. During 1929-1930 of all teachers of one-teacher schools 77.8 per cent held certificates which did not require college training. In the two- or more-teacher schools only 50.9 per cent of the teachers held such certificates.[21] Children who attend the one-teacher schools also have shorter terms than have those who attend the two- or more-teacher schools. The average length of term in 1929-1930 for the one-teacher schools was 158.7 days, while the two- or more-teacher schools were in session for an average number of 173.9 days.[22]

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[15] Seventeenth Biennial Report of the State Superintendent of Public Instruction of Kansas (1909-1910), p. 159.

[16] Ibid., p. 123.

[17] Twentieth Biennial Report of the State Superintendent of Public Instruction of Kansas (1915-1916), p. 544.

[18] Sixteenth Biennial Report of the State Superintendent of Public Instruction of Kansas (1907-1908), p. 181.

[19] Twenty-seventh Biennial Report of the State Superintendent of Public Instruction of Kansas (1929-1930), p. 464.

[20] Ibid., p. 491.

[20*] Thirteenth Biennial Report of the State Superintendent of Public Instruction of Kansas (1901-1902), p. 42.

[21] Twenty-seventh Biennial Report of the Superintendent of Public Instruction of Kansas (1929-1930), p. 491.

In the light of these disadvantages under which education is provided in the one-teacher schools it would seem reasonable to expect to find a superior type of supervision which would assist in a major degree to secure the best results obtainable under such circumstances. It would seem that the state of Kansas would give the inexperienced, inadequately trained, poorly paid teachers in the schools with relatively short terms such aid as efficient supervisory service is capable of rendering. Such assistance, however, is not given. The supervision which is available must be given by a single county superintendent in each county whose time is largely occupied with the performance of clerical and inspectorial duties. Moreover, requirements for the office and the method employed in filling it are such that the county superintendent is likely to be but little better trained for his work than the teacher is for his. The law[23] requires that the county superintendent must have had eighteen months of teaching experience and that he must hold a first-grade certificate which may be obtained by passing an examination[24] with an average grade in all subjects of 90 per cent and with no grade below 75 per cent in the ordinary subjects taught in the elementary school and in the principles and methods of teaching, in the elements of music, in algebra, and in English history. In 98 of the 105 counties[25] his salary ranges from $4.00 per day in counties with a school population of fewer than 500 for not more than 180 days, to $1,600 plus $2.00 per year for each teacher whom he visits. In 42 counties the salary was $1,600 per year; in seven others it ranged from $1,648 to $2,500; and in the other 56 it was less than $1,600.[26] When it is understood that the average county superintendent serves for twelve months of the year, it is evident that the position is not a very attractive one.

The nature and quality of supervision given to the one-teacher schools are summarized by Dr. F. P. O'Brien for a study which he conducted of the qualifications and work of the county superintendents of 77 counties, in the following words:

> "1. The supervision of a majority of the pupils and teachers in the elementary schools of the state is dependent almost entirely upon the county superintendent of schools.
>
> "2. This official makes approximately one visit a year, averaging one and a quarter hours, to each rural school in the county. The distribution of his time during such visits indicates that approximately half the visit is devoted to activities that pertain to supervision of instruction.
>
> "3. A majority of the superintendents have not had previous experience in supervision, and some are without experience in elementary school teaching. Their restricted schooling and their limited professional training make it unlikely that they will realize the larger possibilities of the position.
>
> "4. The salary is too small to attract the type of supervisory officer that is urgently needed."[27]

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[22] Ibid., p. 491.

[23] Kansas School Laws, Revised 1930, Section 268.

[24] Ibid., Section 101.

[25] Ibid., Sections 275-279.

[26] Report of the State School Code Commission of Kansas, 1929, Volume I, pp. 80-81.

[27] O'Brien, F. P. "The County Superintendent of Schools as Supervisor of Instruction." *Bulletin* of the University of Kansas, Volume 27, No. 11, June 1, 1926, p. 12.

Ex-state Superintendent of Public Instruction W. D. Ross states the case forcibly as follows:

> "It is both anomolous and deplorable that in Kansas the inexperienced and untrained teachers get the least supervision; indeed, practically none at all. City schools have their high priced superintendents and their specially trained supervisors and principals who give close supervision to already experienced teachers in groups that rarely exceed twenty. In country schools such supervision as there is must be given by an overworked county superintendent, often himself without professional training, to teachers many of whom are beginners, in some cases two hundred or more in number and scattered over areas as large as some whole states. It need not be said that this does not represent equal educational opportunity or a square deal for the country children."[28]

Summary

1. The administration of public education in Kansas is characterized by an extreme degree of decentralization and a large measure of self-determination by the local districts.
2. The number of separate and distinct administrative organizations is very large, numbering 9,076 different school districts with 27,556 school board members.
3. Rural elementary education was provided in 7,146 one-teacher schools during the school year 1929-1930, with an average daily attendance of 12.63 pupils. In 2,243 districts the enrollment was 10 or fewer pupils for the school year 1932-1933.
4. Conditions are more unfavorable for conducting an effective educational program in the one-teacher districts than in the two- or more-teacher districts. Terms are shorter, teachers are less experienced, the training of teachers is less adequate, salaries are appreciably lower, and supervision is unsatisfactory in both quality and amount.

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[28] Report of the State School Code Commission of Kansas, 1929, Volume I, p. 76.

CHAPTER III

Consolidation of Schools

A consideration of the facts relating to one-teacher schools stated in chapter II reveals the desirability of improving the conditions under which farm children receive their education. Relatively high costs and unfavorable conditions for educational advancement are inconsistent. The purpose of this study is to determine whether this inconsistency can be removed in such a manner as to yield rural children a better educational opportunity, more nearly equal to that enjoyed by children who attend the graded two- or more-teacher schools with their longer terms, graded organization, larger social groups, and better trained, more experienced, and more adequately paid teachers.

The experience of many other parts of the nation and the judgment of authorities on public school administration suggest consolidation as the method to be employed in the solution of the problems which the one-teacher school presents. During the period, 1919-1920 to 1927-1928, the number of consolidated schools for forty-two states increased from 11,890 to 17,004.[1] "The entire number of schools of the consolidated type in the United States at the close of the school year 1927-'28 was probably well over 17,500."[2] During the decade 1918-1928 "The totals show that the average yearly increase was well over 1,000."[3] During the period, 1917-1918 to 1927-1928, the number of one-teacher schools declined from 195,397 to 153,306 in the forty-eight states, or by an average number of 4,207 per year. Georgia, Arkansas, Connecticut, Delaware, Indiana, Maryland, Massachusetts, Nevada, New Hampshire, New Jersey, North Carolina, Ohio, South Carolina, Tennessee, Texas, Virginia, Washington, and Georgia closed 25 per cent or more of their one-teacher schools during these ten years. In 17 states for which data were available 1,480,605 pupils were enrolled in consolidated schools.[4]

Public officials responsible for the administration of public schools have for many years in increasing numbers and with greater cogency of argument fostered the organization of consolidated schools as a means of improving rural education. In 37 biennial reports of state departments of education for 1922 and 1923, discussions and recommendations favorable toward the centralization of schools occur. State departments of 39 states issued publications on the subject during the ten-year period, 1918-1928. Annual or biennial reports in all but four states devoted favorable attention to the subject in 1925 and 1926. In the other four the movement has been supported by the state departments of education.[5]

How strong and emphatic some of these official statements are is manifested in the reports of the Georgia State Department of Education. A part of one of these states that—

> "While I am not ready to say that good teaching is not possible in a one- or two-teacher school, yet the difficulties of securing and holding competent teachers for such schools, the lack of adequate housing and teaching equipment,

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[1] Covert, Timon. Pamphlet No. 6, Rural School Consolidation. Office of Education, p. 3.

[2] *Ibid.*, p. 5.

[3] *Ibid.*, p. 2.

[4] Covert, Timon. Op. cit., p. 8.

[5] *Ibid.*, p. 10.

the usually short and frequently divided terms, and most of all, the necessarily short teaching periods, forever preclude the possibility of satisfactory results in such schools. From a careful study of hundreds of these schedules and time allotments in one-teacher schools of Georgia, it is evident that the total teaching time per day averages considerably more than in our city schools or consolidated rural schools; still there can be given only extremely brief teaching periods because of the multiplying of classes. . . . The impossibility of effectively teaching any subject to little children during a school year is too evident to need discussion. If satisfactory results are to be obtained, enough children must be brought together in order to reduce the number of classes per teacher so that extended time may be had for classroom instruction and supervised study. Consolidation of schools is no longer an experiment."[6]

A part of the argument for the necessity for larger attendance units is stated in the *Survey of Elmore County Schools* in these words:

"In all parts of the country, school officials are recognizing more clearly than ever before that adaptation of the institution to the needs of children makes necessary a school organization large enough that the teacher may devote her time to 1 or 2 classes or sections rather than divide the day among 6 or 8 different classes."[7]

This widespread interest in and concern for consolidation of rural schools by public officials reflect the thinking of writers and thinkers on the problems of rural life and education. The following three statements are but types of what has been said and written on the subject.

Macy Campbell writes:

"Good transportation makes it possible to assemble the farm youth from widely scattered homes to sing together, to play together, to study together, and to learn to work together in successful coöperative agriculture."[8]

Le Roy King states:

"There has probably been no movement in education that promises so far-reaching an influence for the development of rural life in our country as that of the consolidated school and pupil transportation."[9]

Mabel Carney expresses her belief that "The fundamental need of country schools is a change of system, or consolidation. . . ."[10] It is the only way of securing an enrollment large enough to provide the social and cultural contact with companionable associates necessary to the best development of every child. It is the only method of securing and holding trained teachers for country schools and of making possible a division of labor whereby these teachers may have sufficient time to do good work and choose the grades or special subjects for which they are best fitted."[10*]

William T. Harris many years ago expressed his attitude toward consolidation in these words:

"It seems silly to draw this comparison, and yet it is sometimes necessary to look through the other end of the telescope to see things in their true proportions. The stubborn fact is that the old-time district school was fitted to a condition of things that has long since passed away. It is an antiquated institution and its days of usefulness in most country districts are practically over. It belongs with the scythe and the hand rake and is of the day when corn was planted by hand. If the consolidated system were the custom would we think of changing to the present one? In seeking an answer to this question, let it be remembered that no locality that has tried it has ever changed back to the old way."[11]

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[6] *Ibid.,* pp. 10-11 quoted.

[7] Harmon, A. F., Director. *Survey of Elmore County Schools,* Alabama, p. 46.

[8] Campbell, Macy. *Rural Life at the Crossroads.* p. 416.

[9] King, Le Roy A. "Consolidation of Schools and Pupil Transportation," *Annals of the American Academy of Political and Social Science.* Vol. CXVI, November, 1924, p. 69.

[10] Carney, Mabel, Country Life and the Country School. p. 148.

[10*] Ibid., p. 171.

Much more significant, however, than the opinions and statements of school officials and writers on rural life is the concrete evidence of belief in the consolidation of schools manifested by state legislators in the laws which they have enacted in encouragement of the development and maintenance of larger school units for rural children. By 1918 in all states laws existed rendering legal the union of smaller school units into larger ones.[12] Moreover, "legal provision has been made in 27 states for granting state aid to consolidated schools."[13]

This rather general interest in the consolidation of schools has been paralleled over a long number of years by a degree of intermittent interest in the subject in Kansas. For a third of a century the Biennial Reports of the state superintendents of public instruction have frequently made reference to this subject. The frequency of such references, however, has not been accompanied by a practical acceptance of consolidation by the people of the state in actually increasing the size of the rural-school organizations and in the reduction in number of one-teacher schools. Their relative hesitancy to consolidate their one-teacher schools is shown in Table IV.

TABLE IV—Rate at which one-teacher schools were closed during the period, 1918–1928*

STATE.	Number of one-teacher schools.		Percentage decrease in number of one-teacher schools.
	1918.	*1928.*	
Oklahoma	4,805	3,426	28.7
Nebraska	6,638	6,081	8.4
Missouri	9,000	7,393	17.9
Arkansas	5,120	3,758	26.6
Iowa	11,340	9,585	15.5
Colorado	2,222	1,910	14.0
KANSAS	*7,730*	*7,300*	*6.9*

* Covert, Timon. Pamphlet No. 6, Rural School Consolidation. Office of Education, p. 8.

This table is to be read thus: Nebraska had 6,638 one-teacher schools in 1918 and 6,081 in 1928, which represents a decrease of 8.4 per cent in number. The information for the other states is to be read in the same manner.

Frank Nelson, state superintendent of public instruction, a third of a century ago in his Biennial Report for 1899-1900 called attention to some of the deficiencies of the one-teacher schools, emphasizing especially the difficulty of one teacher's attempting to teach all grades, the short term, and the small valuation of some of the districts with the relative disadvantage of rural

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11. Harris, William T. Quoted by Fairchild, E. T., in the Sixteenth Biennial Report of the State Superintendent of Schools of Kansas, p. 115.

12. Covert, Timon. Op. cit., p. 10.

13. Ibid., p. 11.

children in comparison with the children who attended the graded schools. As a remedy for the inferior education afforded by the one-teacher schools he recommended the consolidation of schools, stating that, "It is believed a remedy for this evil is found in the plan of consolidation of rural school districts."[14] He gave a brief description of the method and procedure for effecting a consolidation of two or more one-teacher districts and expressed his opinion that, "As a result of such consolidation, larger and better schools will be formed in many districts and the burden of taxation will not be increased."[15] He closed his discussion of the subject by recommending amendments to the then existent statutes to permit "a majority of the districts to be afforded the right to vote to consolidate their schools and to make such arrangements for the transporting of pupils as may be necessary."[16]

It is interesting to note that at that early date the subject of transportation presented itself as a serious problem, but Superintendent Nelson stated that, "It has been found, however, that the difficulties thus arising can be solved to the general satisfaction of all parties concerned."[17] This was long before the development of good roads or even the general use of the automobile.

Again, in his report for 1901-1902 Superintendent Nelson gives much more space to his treatment of consolidation. He evidently did more than comment on the subject in his biennial reports for among other matters he states that—

> "This department has sent out about 15,000 circulars setting forth the advantages of this plan of school organization. A great many addresses have also been delivered on the subject in various sections of the state, and public sentiment has been quite responsive to the movement."[18]

As further evidence that there was an increasing interest in consolidation, the report contains statements from a number of county superintendents on the subject. One of these so vividly pictures conditions then, 1901-1902, in contrast with the improvements which she conceived consolidation would produce that it is worthy of quoting. It was written by Bertha Marlatt, county superintendent of public instruction of Cloud county, and is as follows:

> "Conditions of Schools under Present System: Too many poorly qualified teachers. Great opportunity for neglect in isolated schools. No permanency. A constant change of teachers. Not sufficient interest. Irregular attendance. Petty troubles of community. No place for teacher to board (in many districts). School board not thoroughly organized. Carelessness on the part of board in transacting business of the schools. Poorly equipped and poorly kept schoolhouses.
>
> "Schools under a System of Consolidation: Closer supervision. Better teachers more thoroughly organized. A graded school and country home, which is the best combination. Longer term of school. Boys and girls will not quit school at fifteen. Could have music supervisor. Could have lectures. Country people would have what they move to town to get. Closer interest in community. All children would have equal school privileges.
>
> "We claim justice to all, special privileges to none. This is an irridescent dream in the schools, since they are scattered. Consolidation of schools will bring about the greatest reformation Kansas has ever had. This is one of

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[14] Nelson, Frank. Twelfth Binenial Report of the State Superintendent of Public Instruction of Kansas, 1899-1900, pp. 22-23.

[15] Ibid., p. 22.

[16] Ibid., p. 22.

[17] Ibid., p. 23.

[18] Ibid., p. 39.

the most important questions of the day for Kansas to solve. . . . Cloud county will be in the foremost ranks when this great wave comes."[19]

A third of a century after this was written equal educational opportunities for rural children with village or city children is an "irridescent dream in Kansas." The "greatest reformation" has not come, and "this great wave" has not even begun to rise. For some reason the hopes and expectations of that earlier generation have failed to materialize in any significant degree.

In his biennial report for 1905-1906 State Superintendent of Public Instruction I. L. Dayhoff makes rather brief reference to consolidation, observing that—

> "The best argument in favor of consolidation is that where the system has had a reasonable trial, it is eminently satisfactory, and under no conditions would the patrons go back to the old district system. . . . Consolidation lessens the per capita cost; but even if it increases the per capita cost, the better service rendered and better service received from the consolidated school would still be a strong argument in its favor."[20]

The most extensive discussion of the subject found in the biennial reports of the state superintendents of public instruction is found in the Sixteenth Biennial Report, for 1907-1908, of E. T. Fairchild, state superintendent of public instruction, who devoted forty-eight pages to the argument for and advantages of consolidation of schools. He maintained that the small size is an inherent defect which cannot be corrected because the pupils "miss the incentive and inspiration that come from numbers." The economic loss due to the "tremendous per capita cost" was emphasized. Teachers in the one-teacher schools, Superintendent Fairchild explained, were inexperienced, poorly trained, and immature. He estimated that their average age was less than 20 years and that for the year 1907-1908 probably more than one-third of them had not taught previously. "These conditions," he contended, "together with others that may be mentioned, are deplorable. The old-time country school, as many of us remember it, has gone, never to return. The large attendance, the male teacher in the winter, the pupils ranging in age from six to twenty-one, are no longer in evidence. In its place is the small school, and too often the old time 'good teacher' has gone to the city. The ambitious scholar follows him, often taking the family with him."[21]

In a most forcible manner he contrasted the changing conditions of life in almost every regard with the static conditions of the rural school. Farmers, he stated, had given up their antiquated clumsy tools and implements for the more modern improved machinery. They were enjoying modern means of communication, the telephone and rural free delivery of mail, and yet the one-teacher school was being retained with all its defects and its inability to train rural children for life in the new kind of world which had been so rapidly developing.

He then made the recommendation that consolidation of rural schools would give rural children the kind of an education which was being desired for them, for, said he, "It is held by all students of this problem that the only remedy is the consolidating or uniting of two, three, or more small, weak schools into one."[22] He added that—

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[19] Nelson, Frank. Thirteenth Biennial Report of the State Superintendent of Public Instruction of Kansas, 1901-1902, p. 43.

[20] Dayhoff, I. L. Fifteenth Biennial Report of the State Superintendent of Public Instruction of Kansas, 1905-1906, pp. 17, 18.

[21] Fairchild, E. T. Sixteenth Biennial Report of the State Superintendent of Public Instruction of Kansas, 1907-08, pp. 90-92.

> "Kansas, from the viewpoint of its small schools and as to transportation, is better adapted to consolidation than are many other states. Kansas also is naturally as ready as any state in the Union to adopt the best, and acquaintance with the work of consolidation should result in a more rapid change to that system than has been experienced heretofore."[23]

To conclude his argument, Superintendent Fairchild added seventy-five arguments for consolidation.

The first concrete manifestation of interest in the consolidation of school districts in Kansas was the organization of the Lorraine Consolidated School in Ellsworth county in 1898. During the 33-year period from that date until 1930, seventeen biennial reports were issued by the state superintendents of public instruction. Aside from rather abstract, colorless statistical data, references were made to the consolidation of schools in nine of them, in some cases exceedingly brief and in other instances at considerable length. This absence of continuity in policy in regard to this very important matter probably accounts in part for the slow progress made by the state in the organization of larger rural school units. The degree to which consolidated organizations have displaced one-teacher schools is lamentably slight when considered either in the absolute or in comparison with the experience of neighboring states. It has already been stated that of the seven states—Kansas, Missouri, Iowa, Nebraska, Colorado, Oklahoma, and Arkansas—Kansas closed a smaller percentage of its one-teacher schools during the decade 1918-1928 than any other of the group.

Viewed in any light, improvement of rural education by the consolidation of small one-teacher schools into larger organizations has been disappointingly slow. At least two and a half times as many consolidated districts were organized during the period 1898-1906[24] as were formed during the last six years for which information is available, 1924-1930.[25-26] During the former period there were developed at least thirteen such schools and during the latter only five. At the date of the publication of the last biennial report of the state superintendent of public instruction there were 177 consolidated districts formed by the union of 551 smaller districts, embracing 6,615.91 square miles and enrolling 21,830 pupils. Since 17 of these districts employed only one teacher each and one maintained no school whatever,[27] the improvement effected in rural education through the organization of these 177 consolidated districts is even less significant than seems at first apparent. Of the total number of pupils approximately 4,066 were enrolled in high school grades. Moreover, since many of the original districts included in the consolidations were two- or more-teacher schools with an approximate enrollment of 8,146 elementary pupils, the number of 21,830 pupils who were enrolled in the consolidated schools in 1930 must be reduced to at least 9,286 to discover the number of children attending these schools who, if the consolidations had not been organized, would have been attending one-teacher rural schools.[28] In other words, a third of a century of experience with consolidation has succeeded in improving the elementary school opportunity of only 9,286 farm children attending school in 1929-1930 who would otherwise have been attending one-teacher schools. This number represents 8.5 per cent of the number of children attending those schools in 1929-1930.

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[22] Ibid., p. 100.

[23] Ibid., p. 117.

[24] Fifteenth Biennial Report of the State Superintendent of Public Instruction of Kansas, 1905-1906, p. 194.

[25] Twenty-fourth Biennial Report of the State Superintendent of Public Instruction of Kansas, 1923-1924, p. 350.

[26] Twenty-seventh Biennial Report of the State Superintendent of Public Instruction of Kansas, 1929-1930, p. 514.

[27] Twenty-seventh Biennial Report of the State Superintendent of Public Instruction of Kansas, 1929-1930, pp. 511-514.

In the light of such meager, almost lamentably insignificant results, at least three pertinent questions are presented for answer. The first is, Why have the people of Kansas accepted consolidation as a solution of the problem of the one-teacher elementary school with such hesitancy and apparent reluctance? The second is, Are the prospects encouraging for an early change in attitude toward consolidated schools? And the third, If there is no immediate prospect of a more general acceptance of consolidation as a procedure for increasing the size of the school attendance unit, is there any other available and feasible method for securing some of the desirable results of larger school organizations for farm boys and girls?

It is difficult to determine the correct answer to the first question—Why have the people of Kansas accepted consolidation as a solution of the problem of the one-teacher elementary school with such hesitancy and apparent reluctance? The answer may be sought, however, by attempting to determine whether the potent objections are against the quality of education afforded in the consolidated schools, or whether certain discoverable factors outside the actual educational processes and achievements of pupils militate against this method of providing education for rural children. There seems to be little, if any, criticism of the work accomplished in the consolidated schools. Studies and investigations of the achievement of children of consolidated schools give rather conclusive evidence that elementary children actually achieve better results in such schools, as is shown later in this study.[29] Moreover, comparisons of conditions which facilitate the performance of school work support the belief that consolidated schools offer better educational advantages to the pupils who attend them than are offered children enrolled in one-teacher schools. Terms are longer, teachers are more efficient and better trained, salaries are higher, and pupils are taught by teachers who have a limited

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28. Note: This number has been derived indirectly since there are no data available bearing directly on the subject which supply the desired information. The number was obtained in the following manner: First, the total enrollment in consolidated schools was found to be 21,830, which included high school pupils and elementary school pupils enrolled in one-teacher consolidated schools. The average daily attendance of high school pupils was at least 3,626.* The number of pupils attending one-teacher consolidated schools was 332. Second, many of the consolidated graded elementary schools are located in communities of such size that their schools would be graded even though they were not consolidated. In these schools the average daily attendance was 8,659.* By determining the percentage which the elementary enrollment in graded, but not consolidated, schools bore to the population, which was found to be 20.5 per cent, and taking this percentage of the population of the communities in which the consolidated schools are located, it was found that the average daily attendance would have been 6,714 pupils if the respective schools were not consolidated. Third, the ratios existing between average daily attendance and enrollment for high-school pupils and elementary pupils respectively in all two- or more-teacher schools were determined. These were found to be .891 and .824 respectively. By dividing 3,623 by .891 and 6,714 by .824 it was found that the number of high-school pupils enrolled was approximately 4,066 and the number of elementary pupils 8,146. These numbers added to 332 make a total of 12,544. It seems seasonable, therefore, to conclude that of the 21,830 pupils enrolled in the consolidated schools for 1929-1930 approximately 9,286 (21,830—12,544) would have been attending one-teacher schools had there been no consolidated schools.

* 1930 Tax Rate Book, the League of Kansas Municipalities, pp. 26-36.

29. See pages 31 *et seq.*

number of grades, usually not more than two, rather than eight different and separate grades as is usually the case in the average one-teacher school.

On the contrary, however, criticisms can be discovered of factors involved in consolidation which are not directly related to pupil accomplishment. Some of these are attributable to transportation difficulties, increased costs, and the sentimental unwillingness of rural people to surrender their one-teacher schools and small district organizations. In a study of the attitude of rural people toward consolidation as sensed by county superintendents, made by Professor Edgar Mendenhall,[30] it was discovered that, in order of frequency of mention, a larger percentage of the county superintendents reported objection due to cost. "Difficulties of transportation" was listed the second highest number of times, and sentiment the third highest.

The objection based on transportation does not seem to be well founded in view of the fact that in 251 districts located in 65 different counties of many sections of the state 497 transportation routes were maintained during the school year, 1929-1930, to transport 7,205 pupils.[31]

No evidence has been discovered to indicate whether the sentiment for the one-teacher district is becoming less or not. It always has been a very real factor which has in a greater or lesser degree militated against consolidation and perhaps still exists in a measurable degree. It probably is a manifestation of the individualistic spirit of rural people and their desire to retain a maximum degree of local control over the schools which their children attend.

The answer to the second question, Are the prospects encouraging for an early change in attitude toward consolidated schools, is inherent in the statistics relating to the history and the rate of development of consolidation to the present time. During the six-year period, 1924-1930, apparently only five new consolidated districts have been organized, only 40 per cent, as many as were organized during the first eight years of the movement, 1898 to 1906, although conditions have been much more favorable for consolidation during the latter period because of improvements in roads, the general use of the automobile, and a marked decrease in the number of children for whom transportation is required. It seems altogether reasonable to believe that the problem of providing better educational opportunities for rural elementary school children in Kansas will not be solved in the near future by an increase in the size of the attendance unit by the employment of the present method of consolidation.

The purpose of this study is to attempt to answer the third question: If there is no immediate prospect of a more general acceptance of consolidation as a procedure for increasing the size of the school attendance unit, is there any other available and feasible method for securing some of the desirable results of larger school organizations?

Summary

1. Consolidation of rural schools has proved to be a very effective method for eliminating one-teacher schools, as shown by the statistics of the Office of Education of the United States Department of the Interior. During the

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[30] Mendenhall, Edgar, Head of Department of Rural Education, Kansas State Teachers College, Pittsburg, Kansas. *The Present Status of Consolidation of Rural Schools in Kansas, 1926.* (No publisher or date of publication given).

[31] Twenty-seventh Biennial Report of the State Superintendent of Public Instruction of Kansas, 1929-1930, pp. 524-525.

period, 1918-1928, an average number of over 1,000 consolidated schools was organized each year, and during the same period an average of 4,207 one-teacher schools were closed each year.

2. State school officials and departments of education have very generally supported and sponsored consolidation.

3. Writers and students of education and rural life have strongly favored consolidation.

4. The consolidation movement in Kansas began in 1897 and has been rather generally encouraged by the State Department of Public Instruction, but by 1930 only 159 such schools employing more than one teacher had been organized, and in them only approximately 9,286 rural children were being educated who otherwise would have attended one-teacher schools.

5. The failure of Kansas people generally to accept the consolidation system raises three questions: First, why have they accepted consolidation as a solution of the problem of the one-teacher elementary school with such hesitancy and apparent reluctance; second, are the prospects encouraging for an early change in attitude toward consolidated schools; and, third, if there is no immediate prospect of a more general acceptance of consolidation as a procedure for increasing the size of the school attendance unit, is there any other available and feasible method for securing some of the desirable results of larger school organizations for farm boys and girls?

6. The purpose of this study is to attempt to discover an acceptable answer to the third question.

CHAPTER IV

Relative Achievement of Pupils in One-teacher and Graded Schools

The essential test of the acceptability of any new school system or plan of administration is the relative quality of the educational opportunity which it affords the children whom it serves. The acceptability of the Coöperative School Area must be determined in the light of the criterion that it should "afford educational opportunities as good as or better than those now offered in the one-teacher schools and graded schools which would be included in the area." At least two procedures are available for determining whether such opportunities would probably be afforded in coöperative schools. One involves a determination of the relative quality of factors which condition the educational product in the two types of schools. Some of these factors are the training, experience, maturity, and salaries of teachers and the length of school term in the respective schools. The second procedure consists of discovering the relative achievements of pupils who have attended one-teacher and graded schools in so far as these have been measured objectively. If it is discovered that children enrolled in one type of school have surpassed those enrolled in the other, it should be logical to expect to find the same kind of outcome when the accomplishment of children who would be enrolled in the same type of school in the future should be measured.

The invention and development of standardized achievement tests have made it possible to measure rather accurately the accomplishment of children in certain school subjects. These tests have been employed much more generally with children who attend city graded schools than with pupils of one-teacher schools. Yet a sufficiently large number of such pupils have been tested to provide fairly adequate information concerning the relative accomplishments of pupils enrolled in one-teacher and small graded schools.

A brief survey of a number of pertinent studies made for this purpose will be presented. These will include several made in other states and a few conducted in Kansas by other investigators. One study will be reported which has been made by the writer to learn the relative achievement of pupils of the one-teacher and the small graded schools which would be included in Coöperative School Areas of one county if they were to be organized. In some of the investigations the factors which condition the quality of formal schooling were studied as well as the relative achievements of one-teacher and graded school pupils as measured by standardized tests.

May [1] compared the intelligence quotients as determined by using the Terman Group Test of Mental Ability, and school achievement as measured by the Stanford Achievement Tests, of 197 rural pupils enrolled in the Robinson township high school of Illinois, with pupils enrolled in the same school whose elementary work had been done in village schools. He also compared certain factors which determine the quality of education provided in the two types of schools, such as teachers' training, experience, and salary. He found that on the Terman Group Test of Mental Ability the village pupils made a median score 16 points above that made by the rural pupils, and that their intelligence quotient was 6.1 points higher. May points out that these tests probably measure in degree the quality of previous educational training and that the differences discovered may not indicate a real difference in native ability. In school achievement as measured by the Stanford Achievement Tests the village pupils surpassed those from the rural schools by 12 points in spelling, 10.5 points in reading, 7.5 points in history-literature, 2 points in arithmetic, 2 points in language usage, and 5 points in nature study.

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[1] May, E. O. "Comparison of Rural and Village Pupils." *The Illinois Teacher*, Volume XVI, No. 3, November, 1927, pp. 196-197, 226-227.

Just as the village pupils were superior to the rural ones in their scores on the mental and achievement tests, so a larger percentage of them remained in high school longer. During the four-year period included in the study, 469 pupils had entered school. By the end of this time 29 per cent of the village pupils had left, while 46.6 per cent of the rural children had gone.

May attempted to discover the causes for these differences and found that the teachers in the village schools had more experience, more college preparation, and received higher salaries. The median experience of the group was five years greater than that of the median rural teacher. In college preparation May found that only 17.9 per cent of the village teachers had no training beyond the high school in contrast with 38.3 per cent of the rural teachers who belonged in this class. The average salary received by the village teachers exceeded the average received by the rural teachers by $245 per year, or 35 per cent. In addition to enjoying better teachers than those who instructed the rural children, the village pupils profited from appreciably longer school terms. Ninety-seven per cent of the rural schools were in session for only seven or eight months, while 38 per cent of the village schools offered eight and one-half months schooling and 52 per cent of them offered nine months.

Stone and Curtis studied the achievement of 114 seventh-, eighth-, and ninth-grade pupils from one-teacher schools in Spokane county, Washington, as compared with the achievement of an equal number of paired pupils from graded schools in the same county. The pupils were paired on the basis of intelligence test scores secured by administering the Terman Group Test of Mental Ability, Form A, to the ninth grade, and the Otis Self-Administering Test of Mental Ability, Intermediate Examination, Form A, to the seventh and eighth grades.

Achievement in the seventh grade was measured by the use of the Stanford Achievement Test, advanced examination. The pupils from the graded schools surpassed those from the one-teacher schools by 13.2 per cent, or in terms of subject ages they were 5.6 months in advance. The same tests were given to the eighth-grade children with the result that the graded-school pupils showed a superiority in achievement over the one-teacher pupils of 3.9 per cent, which represented a difference of 4.5 months. The scores of 45 of these pupils on the state eighth-grade examinations were compared. The comparison showed that the graded children did better than the one-teacher pupils by 5.2 per cent. The ninth-grade pupils were tested by use of the Thorndike Test of Word Knowledge, Form A; Whipple's High School and College Reading Test, Form A; the Briggs English Form Test, Alpha Stone's Reasoning Test, Form 1;

and the Courtis Standard Supervisory Arithmetic Test B, Form 1. "The net average for all subjects, when the scores for the Courtis Arithmetic Test were omitted, was 3.8 months in favor of the graded schools."[2] In conclusion the authors state that "The achievements of pupils of graded schools are shown, by each comparison made, to be greater than the achievements of pupils of one-room rural schools who were matched with them."

Wilson studied the relative achievement of the pupils in one four-teacher, two five-teacher, and eleven one-teacher schools in Connecticut and the factors determining the quality of the teachers and the parentage of the pupils. Grades 3 to 8 inclusive were tested in spelling by the use of the Lippincott Speller Test, 1920, and in handwriting by the use of the Gettysburg Scale. Grades 2 to 8 inclusive were given the Woody Fundamentals Test in addition, and the Thorndike-McCall Form 4 Test in silent reading. Monroe's C scores test in arithmetic problems was used to measure grades 4 to 8 inclusive. From 27 to 70 per cent of the children were of Polish descent. From his study he arrived at these conclusions:

> "1. Organization has little effect upon progress through the compulsory school ages and grades. Parentage, rather than type of school, affects progress of pupils conspicuously in lower grades.
>
> "2. Four- and five-teacher schools hold pupils beyond leaving grade and leaving age better than do one-teacher schools.
>
> "3. Organization as far as one-, four-, or five-teacher schools are concerned has little to do with the ability of pupils to score on standard tests in fundamental school subjects.
>
> "4. One-teacher schools have unprepared, inexperienced teachers; four- and five-teacher schools have teachers of considerable post-high-school education and experience."[3]

Wilson emphasizes the inadequacy of determining the value and effectiveness of a school by these objective measures only. They give no information whatever in relation to the relative ability of these two types of schools to develop desirable appreciations, ideals, and interests. Nor do they give any indication of the nature of the care which the schools provide for the development and maintenance of health, for training in the worthy use of leisure, for concern with proper physical and mental recreation, or for development in effective ability to contribute to and desire happy constructive coöperative group living.

Osburn reported that more than 2,000 ninth-grade pupils were tested for silent reading ability under the direction of the division of educational tests and measurements of the State Department of Education of Wisconsin. The tests given in October, 1920, showed that 30 per cent of those tested did not exceed the standards of the sixth grade in silent reading ability. It was further discovered that "most of the deficient pupils had come from the country schools."[4]

The New York Survey Commission gave a series of achievement tests to approximately 14,000 pupils in 441 rural schools, including schools of one-teacher and of more than one teacher. In a few schools a group intelligence examination was used. Grades 1 to 4 were tested in silent reading by the use of the Sigma 1 test which was prepared for the Virginia survey. The Sigma 3, Form

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[2] Stone, C. W., and Curtis, J. W. "Progress of Equivalent One-room and Graded School Pupils," *Journal of Educational Research*, Volume 16, November, 1927, pp. 260-264.

[3] Wilson, Frank T. *Journal of Rural Education*, Volume III, September, 1923, pp. 19-27.

[4] Osburn, W. J. "Educational Measurements in the Rural Schools of Wisconsin." *The Journal of Rural Education*, Volume 1, No. 10, June, 1922, pp. 441-446.

B, test was given to grades 5 to 12 inclusive to test achievement in silent reading ability. The results showed that—

> "Without exception, in all the primary grades, the four-teacher schools exceeded the one-teacher schools in Sigma 1 scores (and) the superiority of the larger schools over the smaller schools is constant throughout the upper grades. The difference in the scores of these two is about equivalent to the progress which New York pupils make in one year of schooling."[5]

In other subjects except multiplication the pupils of the four-teacher schools surpassed those of the one-teacher schools. A tabulation of the scores for grades 5 and 8 exhibits the differences very clearly, as shown in Table V.

TABLE V—Median scores of pupils in one- and four-teacher schools of New York, 1922, for six subjects in grades 5 and 8*

	Fifth grade.		Eighth grade.	
	One-teacher.	Four-teacher.	One-teacher.	Four-teacher.
Age	12.0	11.7	14.4	14.3
Reading	32	42	66	81
Spelling	12	14	74	84
Addition	13	14	16	17
Multiplication	13	13	17	17
History information	....	....	31	39
History thought	....	....	29	37

* Ibid., p. 218.

The intelligence scores of the pupils of the larger schools were higher than for those of the one-teacher schools, which might in part account for the superior achievement. Yet the Survey Commission points out that the higher intelligence scores might be due to the lower ability in reading, which would enter into the achievement in all the tests where reading was required.[6]

In conclusion the Commission states:

> "Whatever the detailed cause may be, however, the fact remains that the one-teacher school is a less productive educational institution than the larger school unit, and the pupils who attend the smaller schools are being handicapped for life by this fact. If the State of New York is to secure to the pupils of these more isolated regions an educational opportunity fairly equivalent to that now available to the children who attend the larger schools, it must change and improve these conditions."[7]

The General Education Board, in its study of Public Education in Indiana, evaluated the achievement of elementary children in a large number of rural schools employing one to six teachers and in town and city schools. Achievement was measured in reading by the use of the Thorndike-McCall Silent Reading Tests, in arithmetic by the Woody Addition and Multiplication Scales, in history by the Van Wagenen History Scales, and in spelling by lists of words taken from the Ashbaugh Spelling Scale. The results revealed

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5. Haggerty, M. E. *Rural School Survey of New York State.* Ithaca, New York, 1922, p. 15.
6. Ibid., p. 222.
7. Ibid., p. 223.

that the one-teacher pupils did work inferior to that of pupils of all other types of schools. Table VI exhibits the relative achievements of pupils in grades 5, 7, and 8 in the different types of schools.

TABLE VI—Average achievements of Indiana fifth-, seventh- and eighth-grade pupils in reading, spelling and arithmetic in terms of grade standards*

KIND OF SCHOOL.	Standard reached by fifth grade.	Standard reached by seventh grade.	Standard reached by eighth grade.
One-teacher	4.4	5.8	6.5
Two-teacher	4.6	6.1	7.0
Three-teacher	4.7	6.1	6.8
Four-teacher	4.7	6.1	6.8
Five-teacher	4.7	6.2	6.7
Six- or more-teacher	4.8	6.2	6.8

* Bachman, Frank P., Director. *Public Education in Indiana.* Report of the Indiana Education Survey Commission, prepared under the direction of the Commission by the General Education Board. General Education Board. New York, 1923, pp. 3–15, 21.

The author of the report adds:

"The foregoing discussion shows, first, that the city schools are not as good as they should be; second, that the rural schools, especially the one-teacher schools, are much worse, and that rural teachers are as a body immature, unprepared, inexperienced and deficient in teaching skill."[8]

The Virginia Survey Staff in 1919 measured the intelligence and achievement in a group of subjects of pupils attending schools employing one, two, three, four, and more teachers, and in the city school systems. The tests used were the Woody Arithmetic Scales, Series B, for measuring ability to add, subtract, multiply and divide; Exercise 2 of the General Intelligence Examination 2 to measure reasoning ability in arithmetic; the Thorndike Reading Scale, Alpha 2 for measuring reading ability, and the Ayres Spelling Scale for measuring ability to spell. The achievement in handwriting was measured by use of the Starch Handwriting Scale; and for the measurement of intelligence the General Intelligence Examination, Delta 2 was employed. The findings are shown in Table VII.

A study of the table reveals that the pupils of four- or more-teacher schools surpassed those of the one-teacher schools in every instance except that the scores for handwriting in the two types of schools for grade 6 were the same. This superior achievement was made by the pupils of the four- or more-teacher schools even though they were younger than those in the one-teacher schools by "about one chronological year."[9]

The pupils of the three-teacher schools surpassed those of the one-teacher schools in five cases out of nine possible comparisons in the third grade. In all cases the fourth-grade pupils in the three-teacher schools surpassed those

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[8] Bachman, Frank P., Director. *Public Education in Indiana.* Report of the Indiana Education Survey Commission, prepared under the direction of the Commission by the General Education Board. General Education Board, New York, 1923, p. 14.

[9] Inglis, Alexander J., Director. *Virginia Public Schools.* A survey of a Southern State Public School System, Volume VIII, 1921, p. 61.

TABLE VII.—Achievement of white pupils in schools of different types in arithmetic, spelling, reading, handwriting, and intelligence scores in Virginia

GRADES AND NUMBER OF TEACHERS.	Median scores.						Average scores.		
	Addition[1]	Subtraction[1]	Multiplication[1]	Division[1]	Reasoning in Arithmetic[2]	Intelligence[6]	Spelling[3]	Reading[4]	Handwriting[5]
Grade 3:									
1 Teacher	6.8	5.9	3.6	2.5	3.2	24.3	75.22	3.9	8.9
2 Teachers	7.8	5.7	6.1	3.3	3.2	26.3	80.28	4.3	9.0
3 Teachers	7.2	6.1	4.6	3.5	3.4	21.9	68.47	3.7	8.8
4 or more teachers	8.7	8.4	7.1	3.2	4.0	33.0	88.47	4.4	9.3
Grade 4:									
1 Teacher	8.4	8.0	6.1	4.1	5.2	38.0	80.42	4.3	9.4
2 Teachers	9.8	8.1	7.3	4.5	5.2	41.0	93.24	4.7	9.8
3 Teachers	10.3	8.2	8.7	4.4	6.3	41.4	91.00	4.9	9.5
4 or more teachers	12.1	9.1	9.7	6.7	6.6	48.7	102.17	4.9	9.5
Grade 5:									
1 Teacher	11.2	9.3	10.4	5.9	7.0	60.7	93.77	5.4	10.0
2 Teachers	11.2	9.5	10.1	5.0	7.1	60.9	96.71	5.3	10.1
3 Teachers	10.2	9.7	10.2	5.0	6.1	56.4	88.94	5.4	9.8
4 or more teachers	13.8	11.4	10.7	7.8	7.5	68.4	102.87	5.6	10.0
Grade 6:									
1 Teacher	11.3	9.7	11.3	6.0	7.7	70.0	105.82	6.3	9.9
2 Teachers	12.6	11.8	11.6	9.2	8.2	72.8	107.58	6.3	10.6
3 Teachers	13.1	7.8	11.5	9.1	8.7	73.3	112.64	5.8	10.9
4 or more teachers	14.1	12.9	14.0	9.5	8.8	80.8	119.91	6.4	10.5
Grade 7:									
1 Teacher	13.6	11.5	14.1	10.1	10.3	90.0	112.93	......	10.4
2 Teachers	14.8	......	14.8	10.9	9.0	90.8	109.86	6.7	11.3
3 Teachers	14.4	11.9	15.2	10.9	9.8	86.1	124.6	6.2	11.2
4 or more teachers	16.1	14.0	14.5	11.4	10.4	94.4	125.11	6.9	11.0

1. Inglis, Alexander J., Director. *Virginia Public Schools.* Vol. 8, p. 61.
2. Ibid., Vol. 8, p. 66.
3. Ibid., Vol. 8, p. 99.
4. Ibid., Vol. 8, p. 21.
5. Ibid., Vol. 8, p. 79.
6. Ibid., Vol. 8, pp. 163-165.

of the one-teacher group. The one-teacher pupils in the fifth grade surpassed those of the three-teacher schools in seven of nine possible comparisons; they equaled them in one and were inferior to them in one. The scores of pupils in the three-teacher schools were higher in six instances in the sixth grade and lower in three. In the seventh grade the pupils of the three-teacher schools made higher scores except in two comparisons.

The pupils of the two-teacher schools surpassed those of the one-teacher schools in the third grade in seven instances, equalled them in one, and made lower scores in one. In the fourth grade the scores of the pupils of the two-teacher schools were higher than those of one-teacher pupils except in one instance in which the scores were equal. The fifth-grade scores of pupils of two-teacher schools in five comparisons were higher, in three comparisons they were lower than those of the pupils of the one-teacher schools, and in one comparison they were equal. Eight of the scores were higher for the sixth grade of the two-teacher schools than those of the one-teacher pupils. In one case the scores were equal. The seventh-grade pupils of the two-teacher schools surpassed those of the one-teacher pupils in five comparisons and were lower in two.

The evidence shows that the pupils of the one-teacher schools performed more poorly in the tests than those of the small grade schools with whom they were compared although the difference is not so significant in the case of the two- and three-teacher schools. Pupils of the four- and more-teacher schools did, however, surpass those of the one-teacher schools in a marked degree. The comments of the survey staff on the disparity of achievement between pupils of the one-teacher schools and those of the other types is most emphatic, for they said, "In the fundamentals of arithmetic the one-teacher school is always inferior." These comments continue:

> "In reading, the field in which Virginia cities achieve their best record, the pupils of the one-teacher schools are one year behind those of the four-teacher schools and about two and one-half years behind the median scores of the Virginia cities.[10]
>
> "In spelling the results show the one-room schools to be three and one-half years short of achieving the standard set in the Ayres Spelling Scale and one and one-half years behind the records of city schools of Virginia.[11]
>
> "By every measure applied the one-room school is the poorest educational institution in the state, the pupils in these schools are not getting a square deal.[12]
>
> "It should always be remembered, however, that one-room schools can never provide an education of desirable standard, and that their maintenance should be considered as a last resort where school consolidation is impossible."[13]

A committee representing the Iowa State Teachers College engaged in making a study in May, 1924, of consolidated schools in Iowa administered a series of standardized tests to 134 pupils of the Colo Consolidated School and to 90 pupils of twelve one-teacher schools located in the surrounding country. The tests employed were the Illinois Silent Reading Test and the Iowa Combination Tests in arithmetic. The two groups compared favorably in natural ability, for the committee stated that—

> "There are twelve one-room rural districts bordering on and surrounding the Colo district. The same type of people reside in these rural districts as reside in the Colo district. The pupils compare very well in natural ability and in social environment, Colo being the social center for the people of the entire territory under consideration."[14]

In summarizing its report the committee stated that the "efficiency of the Colo schools over the surrounding rural schools is very much in evidence" because "during the average school life of a child, which is about six years" he would have gained as a minimum one year "over and above the child in the rural school" or the child who should attend eight years in the Colo schools would "have the advantages of the equivalent of one and one-half school years more than the child in the rural school."

Pittman tested "194 children in twenty-eight one-teacher schools" and "182 children in fourteen schoolrooms in two-teacher schools" in Brown county, South Dakota. He tested thirteen functions by the use of one test in each function. The test results showed that "out of a total of 78 median scores, the scores of the two-teacher school group were equal or superior to the scores of the one-teacher school group 58 times."[15]

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[10] Ibid., p. 115.

[11] Ibid., p. 195.

[12] Ibid., p. 12.

[13] Ibid., p. 220.

[14] Ritter, E. L., Chairman, "Report of Committee on Consolidated School Costs," December, 1924. Extension Division, Iowa State Teachers College, pp. 38-44. (Mimeographed.)

The Rural School Department of the National Education Association appointed a committee composed of six members, of which John M. Foote, state supervisor of rural and elementary schools of Louisiana, was chairman, to make an investigation of the relative efficiency of instruction in consolidated and rural one-teacher schools. The Committee made its study of the outcomes in teaching reading as measured by the Monroe Standardized Silent Reading Tests, in arithmetic as measured by the Woody-McCall Mixed Fundamentals Test, in language as measured by the Trabue Language Scales, B and C, in spelling as measured by the Iowa Spelling Scale; and in measuring handwriting the Ayres Handwriting Scale, Gettysburg edition, was used. "No effort was made to apply mental tests. The inquiry has proceeded upon the assumption that general intelligence in the two groups is similarly distributed."

The pupils of 135 consolidated and 374 one-teacher schools located in 19 states were given the tests. A total of 10,999 consolidated school pupils and 4,653 one-teacher pupils enrolled in grades 5 to 8 inclusive were tested. The average number of pupils per teacher was 25.7 in the consolidated schools and 23.3 in the one-teacher schools. The average number of teachers in the consolidated schools was 7.35 per school. Due to the extensiveness of this investigation, the summary of findings as reported by the Committee is given in full as follows:

"The preceding data and discursive treatment seem to warrant the following conclusions:

"1. The study has been sufficiently extensive in area, in number of schools, and number of pupils to constitute a satisfactory cross-section of instruction in the consolidated schools and in the one-teacher schools in the subjects tested.

"2. Pupils in the one-teacher schools are .14 of a year younger than are those in the consolidated schools.

"3. The holding power of the consolidated school is superior to that of the one-teacher school in the upper grades.

"4. The rate of progress from grade to grade is very nearly equal in the two schools; pupils advance about as rapidly in one type as in the other.

"5. There is a significant difference in the results of instruction in each grade in favor of the consolidated school.

"6. When the grade achievement differences are converted into terms of yearly progress, they range from 18 to 40 per cent of a year in favor of the large type of school, with a general median difference of 27 per cent.

"7. The subject-achievement differences range from 10 to 44 per cent with a general median difference of 27.5 per cent. The greatest differences are found in rate and quality of handwriting. Comprehension of reading takes next rank. The smallest difference is in Arithmetic.

"8. The grade-achievement differences increase from grade to grade. They are distinctly larger in the three upper than in the three lower grades.

"9. The age-achievement differences are in favor of the consolidated school. They tend to confirm the grade-achievement comparisons.

"10. When converted into terms of yearly progress the age-achievement differences range from 13 to 56 per cent of a year with a median age of 33 per cent. While the per cents are somewhat greater, they are in general agreement with grade-achievement comparisons.

"11. The age-achievement differences increase with the advancing ages.

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[15] Pittman, M. I. *The Value of School Supervision.* Warwick and York, Inc. (1921), p. 13.

> "12. Five of the fourteen administrative facts reported in Table VIII compare important conditions.* Two favor each type of school by insignificant amounts. The fifth, qualifications of teachers, is decidedly in favor of the consolidated school." [16]

Although the study revealed the superiority of consolidated schools in the quality of instruction offered children in those subjects under investigation, the committee in charge pointed out that the degree of superiority was not very great, and raised the question, "Why is there such a small difference in the results of instruction between the two types of schools?" [17]

Myers maintains that Foote's findings and interpretations do not justify the conclusion that the achievement of pupils of consolidated schools is superior to that of pupils of one-teacher schools when based upon the rate of yearly progress made. He also comments favorably upon the quality of the one-teacher school as an educational institution as follows:

> "According to such measurements as are available at present, it would seem that the miserable one-teacher school is as efficient, day for day, as the better staffed, better financed graded schools in so far as school achievement tests can show—as witness the Virginia and Indiana surveys when read with understanding; and the activities of Osburn, O'Brien and Smart, Morrison, Foote and Wilson writing in the *Journal.*" [18]

O'Brien and Smart during the school year 1920-1921 made a study of the achievement of 108 graded school pupils and 71 one-teacher pupils of grades 3 to 8 inclusive in Johnson county, Kansas. Two graded schools and six one-teacher schools were included in the study. One of the graded districts employing three teachers lies practically at the center of the area formed by the six one-teacher districts. The second graded school district adjoins one of the one-teacher school districts, so that the eight districts can properly be regarded as forming a compact area with a homogeneous population engaged in similar vocational pursuits.

The National Intelligence Scale (A, Form 1) and the following four standardized achievement tests were given to the pupils of these eight schools: the Courtis Standardized Tests in Arithmetic (Series B, Form 3), the Ayres Handwriting Scale, the Burgess Silent Reading Scale (P. S.), and the Nassau Revision of the Hillegas Scale for English composition.

The test results showed that the pupils in the graded schools surpassed those of the one-teacher schools in every test employed. The mean number of arithmetic problems worked by 71 pupils of the one-teacher schools was 20.8 per pupil, of which 47.7 per cent were correct. The mean number worked by the graded school children was 25.2 problems per pupil with a degree of accuracy of 58 per cent. The graded school pupils worked more problems in the same period of time with a greater degree of accuracy.

In handwriting the graded school pupils surpassed the pupils of the one-teacher schools by 4.2 points. The median score for silent reading for the graded school children was 41.5. The one-teacher pupils made a median score of 37. The medians in English composition were practically the same although the range at the higher end of the scale was more favorable to the graded school children. The median scores in the intelligence test were 77.3 and 73.7 for the graded and one-teacher pupils respectively.[19]

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*NOTE.—Other items referred to are: (a) Experience of three or more years closely alike in both types; (b) in consolidated schools teachers continue in service .88 years longer than in one-teacher schools; (c) consolidated school terms are .34 month longer; and (3) one-teacher schools have 2.4 fewer pupils than consolidated schools.

[16] Foote, John M., chairman. "A Comparative Study of Instruction in Consolidated and One-teacher Schools." *The Rural School Journal,* Volume II, No. 8, April, 1923, pp. 350-351.

[17] Ibid., p. 351.

[18] Myers, C. E. "The One-teacher School, Front and Center." The *Journal of Rural Education,* May-June, 1924, Volume 3, Nos. 9 and 10, pp. 439-449.

O'Brien, Worcester, and Mendenhall made a survey in 1921-1922 of a number of schools of different types in Kansas for the State School Code Commission to determine the relative efficiency of one-teacher, small graded, and city graded schools. Relative efficiency was determined by measuring the achievements of pupils by the use of standardized tests and by comparing a number of factors which condition the educational opportunities of children.

The tests were administered to 4,244 pupils distributed and classified as indicated in Table VIII.

TABLE VIII—Number, type, and location of Kansas elementary schools included in study by O'Brien, Worcester and Mendenhall[1]

County Represented.	One-teacher schools.		Two-teacher schools.		Third-class cities.		Second-class cities.		Total number of pupils.
	Number of schools...	Number of pupils...	Number of schools...	Number of pupils...	Number of schools...	Number of pupils...	Number of schools...	Number of pupils...	
Douglas	14	202	......	......	1	51	......	......	253
Ellis	8	92	1	28	1	170	......	......	290
Decatur	......	......	......	......	1	76	......	......	76
Jefferson	13	205	3	74	1	75	......	......	354
Johnson	8	91	......	......	1	64	......	......	155
Kingman	......	......	......	......	......	......	1	315	315
Leavenworth	2	18	......	......	1	64	......	......	82
Rooks	12	88	......	......	1	167	......	......	255
Seward	9	121	......	......	......	......	1	260	381
Cloud	......	......	......	......	......	......	1	490	490
Cherokee	4	68	......	......	......	......	......	......	68
Crawford	2	26	1	63	......	......	1	370	459
Labette	4	44	1	45	......	......	......	......	89
Montgomery	5	76	1	29	......	......	......	......	105
Lyons	6	81	......	......	1	126	......	......	207
Greenwood	6	74	......	......	1	114	......	......	188
Marion	5	46	2	51	1	101	1	279	477
Totals	98	1,232	9	290	10	1,008	5	1,714	4,244

[1] O'Brien, F. P., chairman. *The Results of Instruction in Different Types of Elementary Schools in the State of Kansas*, 1921-'22. Kansas State Teachers College Press, Pittsburg, Kansas. 46 p.

The table is to be read thus: In Douglas county 14 one-teacher schools with a combined enrollment of 202 pupils were included in the study with one third-class city with an enrollment of 51 pupils. The total number of pupils tested in Douglas county was 253. By referring to Map I on page 12 it will be found that the 17 counties listed in the table are rather well distributed over the state. An examination of the table will reveal that the schools of the third-class cities are relatively small, having an average enrollment of only 100.8 pupils. In fact, these are small village schools. The table likewise reveals that the second-class cities are only larger villages. The average enrollment of their schools included in the study was only 342.8.

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[19] O'Brien, F. P., and Smart, T. J. "Schooling in One-teacher Schools," *Bulletin* of the University of Kansas, Volume 22, No. 18, December 1, 1921, p. 12.

The tests employed were the "W" list of the Buckingham-Ayers Scale of Spelling, the Burgess Scale for the Measurement of Silent Reading, the Courtis Standard Tests, and the Willing Scale for Measuring Written Composition. Handwriting was measured by the use of the Ayres Handwriting Scale. The Monroe Reasoning Test in arithmetic was given to the pupils of a part of the one-teacher schools and of a part of the third-class city schools. The comparative results are shown in Table IX.

TABLE IX—Median scores in reading, spelling, arithmetic, composition, and handwriting in different types of Kansas schools as found by O'Brien, Mendenhall and Worcester.

TYPE OF SCHOOL.	Reading[1]	Spelling[2]	Written composition[3]	Handwriting[4]	Addition[5]	Subtraction[5]	Multiplication[5]	Division[5]	Reasoning in arithmetic[6]
Grade 3:									
1 Teacher	1.90	....	16.50	23.50	.70	.60	......	......	......
2 Teachers	2.00	....	20.20	22.60	.90	.70	......	......	......
Third-class cities	2.90	....	17.30	28.10	.80	.80	......	......	......
Second-class cities	3.46	....	16.60	30.60	.80	.70	......	......	......
Grade 4:									
1 Teacher	3.70	....	21.00	26.40	1.10	1.50	.80	.60	18.30
2 Teachers	3.37	....	22.70	26.30	1.40	1.80	.90	.60	......
Third-class cities	5.32	....	24.80	31.60	1.50	2.10	1.60	.60	19.00
Second-class cities	5.28	....	28.00	34.10	1.90	2.20	.90	.60	......
Grade 5:									
1 Teacher	5.20	....	27.40	29.20	1.60	2.30	1.70	.70	18.30
2 Teachers	5.00	....	25.00	28.50	2.30	2.70	2.30	.70	......
Third-class cities	6.76	....	28.50	33.10	2.40	3.60	2.90	.90	19.00
Second-class cities	7.29	....	30.70	34.30	1.90	3.10	2.10	.90	......
Grade 6:									
1 Teacher	6.38	....	29.00	31.60	2.40	3.30	2.90	1.00	19.70
2 Teachers	6.00	....	26.70	33.20	3.00	4.80	3.40	1.60	......
Third-class cities	7.30	....	32.60	36.50	2.80	5.50	3.50	2.50	29.50
Second-class cities	8.17	....	39.80	47.30	3.40	4.80	3.60	5.20	......
Grade 7:									
1 Teacher	7.40	5.00	34.10	36.10	3.00	5.10	3.70	1.90	19.70
2 Teachers	7.75	7.00	33.50	32.00	3.30	6.40	3.70	3.30	......
Third-class cities	8.80	8.00	36.40	41.80	4.00	6.20	5.10	3.50	29.50
Second-class cities	9.89	8.00	43.00	44.60	4.00	6.50	4.70	3.60	......
Grade 8:									
1 Teacher	8.70	9.00	36.50	39.80	3.70	6.70	5.00	3.90	20.30
2 Teachers	9.00	12.00	38.80	39.20	4.50	8.00	7.40	5.50	......
Third-class cities	8.90	12.00	37.40	39.70	4.70	7.20	5.90	4.70	26.50
Second-class cities	10.22	12.00	43.30	40.90	5.00	8.60	6.40	5.50	......

References:

1. O'Brien, F. P., Chairman. *The Results of Instruction in Different Types of Elementary Schools in the State of Kansas,* 1921-'22. Kansas State Teachers College Press, Pittsburg, Kansas, p. 9.

2. Ibid., p. 8. 3. Ibid., p. 15. 4. Ibid., p. 13. 5. Ibid., p. 11. 6. Ibid., p. 14.

This table is to be read thus: The median score in reading for the third grade for one-teacher schools was 1.9; for two-teacher schools, 2.0; for third-class city schools, 2.9; and for second-class city schools, 3.46.

An inspection of the table reveals that in reading alone did only two grades of the one-teacher schools, the fifth and sixth, surpass the pupils of the same grades in the two-teacher schools. In spelling the pupils of the one-teacher schools did more poorly than all other pupils who were tested. The scores of grades 5, 6, and 7 of the one-teacher schools in written composition exceeded those of the same grades in the two-teacher schools only. In handwriting the one-teacher pupils did better than all grades of the two-teacher schools except grade 6, but their scores were lower than those of all grades in the second- and third-class city schools except grade 8 of the third-class city group. In not a single instance did the pupils of the one-teacher schools surpass those of the other groups in the tests in either the fundamental operations or in reasoning in arithmetic.

A summarization of these comparisons shows that the pupils of one-teacher schools made lower scores than those of the second-class city pupils except in the case of grade 8 in the handwriting test. This grade achieved a score of .1 better than did the same grade of the third-class city schools. Of 46 possible comparisons with the pupils of two-teacher schools, the pupils of the one-teacher schools made higher scores in only 11 cases.

The survey committee found that "the boys and girls in the one-teacher schools are in general getting an inferior kind of instruction" and "the pupil achievements in the graded schools are in general much superior to the results of instruction in the one-teacher schools."[20] The committee further recommended the "displacement of the one-room one-teacher type of school wherever possible in favor of the graded-school type of organization.[21]

The relative achievement of pupils in 16 one-teacher and 7 graded schools in Riley county, which could be grouped into seven Coöperative School Areas, was investigated by the writer for the purposes of this study. Four of the graded schools had two teachers each, one had three, and two had four. The total number of pupils who were tested in the seven small graded schools was 314 and in the sixteen one-teacher schools was 162.

Achievement was measured in reading by use of the Thorndike-McCall Reading Scale, Form 8, in grades 3 to 8 inclusive, and by the use of the Haggerty Reading Examination Sigma 1 in grades 1 and 2. Spelling achievement in grades 2 to 8 inclusive was measured by use of the McCall-Morrison Spelling Scale. For arithmetic achievement the Compass Survey Tests in Arithmetic were employed to measure achievement in addition, subtraction, multiplication, and division in grades 3 to 8 inclusive. To measure reasoning ability the Monroe Standardized Test in Arithmetic was used in grades 3 to 8 inclusive. In order to compare the mental ability of the pupils tested the McCall Multi-Mental Scale was employed in grades 3 to 8 inclusive. The tests were administered during the interval, April 11 to 17, 1932, by two teachers well trained and experienced in the giving of tests. In May, 1932, the same achievement tests were given to the pupils of the schools of a second-class city located in the same county with an enrollment of 1,413 pupils in the elementary grades. The McCall Multi-Mental Tests were not given to these pupils. The comparative results of these tests are shown in Table X.

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[20] O'Brien, F. P., Chairman. *The Results of Instruction in Different Types of Elementary Schools in the State of Kansas* (1921-22), Kansas State Teachers College Press, Pittsburg, Kansas, p. 129.

[21] Ibid., p. 30.

TABLE X.—Median or mean scores in reading, spelling and arithmetic, median intelligence quotients, and median chronological ages in different types of Riley county schools.

GRADE AND NUMBER OF TEACHERS.	Reading.[1]	Spelling.	Fundamentals of arithmetic.	Reasoning in arithmetic.		Chronological age.	Intelligence quotient.
				Principle.	Answer.		
Grade 1:							
1 Teacher	9	......	......	......	......	......	......
Small grade	7	......	......	......	......	......	......
City	17.6	......	......	......	......	......	......
Grade 2:							
1 Teacher	7	6	......	......	......	......	......
Small grade	14	10	......	......	......	......	......
City	27.8	14.5	......	......	......	......	......
Grade 3:							
1 Teacher	97	15.5	65.5	......	......	8–6[2]	109
Small grade	98.5	18	70.5	......	......	8–5	109
City	118	22.5	......	......	......	......	......
Grade 4:							
1 Teacher	107	22	7.5	14.8	5.25	9–9	99
Small grade	93	24	9.8	15.6	9.1	9–9	100
City	113	25.1	......	17.9	18.4	......	......
Grade 5:							
1 Teacher	96	29.5	15.6	18.5	10.0	10–8	99
Small grade	101	33	18.6	20.5	10.3	11–0	98
City	119	......	......	31.5	18.6	......	......
Grade 6:							
1 Teacher	95	34	18.6	11.0	6.3	11–8	94
Small grade	95	34	22.5	11.0	7.0	12–0	94
City	120.7	37.8	......	24.2	17.0	......	......
Grade 7:							
1 Teacher	99	34.5	20.5	16.0	10.75	13–3	96
Small grade	88	38	27.7	1.5	13.3	13–0	87
City	114.1	42.8	......	33.6	16.6	......	......
Grade 8:							
1 Teacher	91	40	24.25	10.5	5.3	14–6	86
Small grade	95	41.5	29.0	14.1	6.1	14–0	88
City	109.6	45.3	......	20.6	10.3	......	......

[1] The scores for grades 3 to 8 inclusive are median scores for the one-teacher and small grade schools and average scores for the city schools.

[2] To be read: 8 years, 6 months, etc.

This table is to be read thus: For grade 1, the median score of pupils of the one-teacher schools in reading was 9; of the small graded schools, 7; and of the city school, 17.6. The rest of the table is to be read in like manner.

An inspection of the table reveals that in reading the scores of three of the grades of the one-teacher schools were higher than those of the small graded schools, that they were lower for four grades, and equal for one. The scores in spelling for the pupils of the one-teacher schools did not equal or exceed those of the pupils of the other types of schools in a single comparison. The pupils of the small graded schools surpassed those of the one-teacher schools in their ability to add, subtract, multiply, and divide in every grade. The fifth-grade pupils of the small graded schools did almost as well as the sixth-grade pupils in the one-teacher schools; the sixth-grade and seventh-grade pupils of the small graded schools did better than the seventh- and eighth-grade pupils respectively of the one-teacher schools. In the attainment in reasoning ability in arithmetic as indicated by the scores for the use of the correct principle in the solution of problems, the pupils of the small graded schools surpassed those of the one-teacher schools in all grades except the sixth. In this grade the scores were the same. The scores for correctness of answers were higher for the small graded schools in every grade. In all cases for which comparable scores were available the city-school pupils surpassed those of both other types of schools.

The median chronological ages for grades 3, 7, and 8 were lower for the pupils of the small graded schools than for those of the one-teacher schools. For grades 5 and 6 the ages were higher and for grade 4 they were the same. Where differences did exist, however, they were really so small as to be of no great consequence. The ages of pupils in grades 1 and 2 were not determined. The median intelligence quotients for pupils of grades 3 and 6 in the one-teacher and small graded schools are the same; the median intelligence quotients for grades 4 and 8 of the small graded schools were higher than for the one-teacher schools. For grades 5 and 7 the median intelligence quotients were lower than for the one-teacher schools. As in the case of chronological ages, the difference in median intelligence quotients was rather insignificant, as shown in Table XI.

TABLE XI.—Median chronological and mental ages, grade placement, and intelligence quotients of the pupils of grades 3 to 8, inclusive, included in the Riley county study as shown by the McCall Multi-mental tests

TYPE OF SCHOOLS.	Chronological age.	Mental age.	Grade placement.	Intelligence quotient.
Grade 3:				
One-teacher	8–6*a*	9–5*b*	3.6*c*	109*d*
Small grade	8–5	9–4	3.4	109
Grade 4:				
One-teacher	9–9	9–7	4.0	99
Small grade	9–9	10–0	4.2	100
Grade 5:				
One-teacher	10–8	10–6	4.8	99
Small grade	11–0	10–8	5.0	98
Grade 6:				
One-teacher	11–8	10–8	5.0	94
Small grade	12–0	10–8	5.0	94
Grade 7:				
One-teacher	13–3	12–0	6.2	96
Small grade	13–0	11–6	5.8	87
Grade 8:				
One-teacher	14–6	12–2	6.6	86
Small grade	14–0	12–6	6.6	88

(*a*) To be read: 8 years, 6 months.
(*b*) To be read: 9 years, 5 months.
(*c*) To be read: The sixth month of the third grade.
(*d*) To be read: The intelligence quotient is 109.

The results of this series of investigations as to the relative achievement of pupils of one-teacher and of small and large graded schools would seem to offer sufficient evidence for believing that if one-teacher schools in Kansas were closed and the children enrolled in them should attend graded schools, their educational opportunities would be improved at least for development in the core subjects of the elementary school curriculum. There are also perhaps significant additional educational values offered by the graded schools in greater degree than by the one-teacher schools, but which have not been measured in an objective manner and which perhaps in the present state of educational science cannot be so measured. Some of these values are inherent in the larger groups enrolled in the graded schools. Because of the larger numbers coöperative activities in play and work are possible from which may develop socialized attitudes and ideals essential to successful and happy living in the modern world. It is difficult to understand how such growth can occur in an isolated school with a small group of children of from one to ten in number and ranging from six to fourteen years in age. Moreover, the large number of classes which the teacher of a one-teacher school must instruct, as one-teacher schools are organized in Kansas, renders it very difficult if not impossible to give the children the experiences which come from a richer curriculum and a type of school organization which permits the devotion of a liberal amount of time and attention to such subject matter fields as art, music, literature, science, practical arts, health, and directed play.

Rural life, necessitating in a large degree by its very nature isolation and seclusion, encourages an overdevelopment of individualistic tendencies. The nature of the farm child's school experiences should tend toward counteracting these tendencies. Yet it is difficult to understand how such a desirable result can be achieved in the restricted social environment afforded by the small one-teacher Kansas school.

Summary

A number of reports of investigations conducted to determine the relative efficiency of one-teacher and graded schools are presented in an effort to discover whether pupils in the graded schools make greater progress than those attending one-teacher schools. These reports do afford evidence which tends to support the belief that if pupils were transferred from one-teacher schools to graded schools, as would occur in the organization of Coöperative School Areas, their educational opportunities would be improved.

CHAPTER V

Determination and Division of Costs

Transportation

The organization of Coöperative School Areas would necessitate the transportation of the pupils who reside in one-teacher districts to the coöperative school. The purpose of this chapter is the development of a technique for determining the cost of transporting the pupils of any given one-teacher district to any given coöperative school in a Coöperative School Area. In doing this it becomes necessary to decide upon the unit or units of cost and a method for determining their number. The conveyance-mile and the daily wage of drivers are proposed as the fundamental elements basic for cost determination for transportation. The conveyance-mile cost multiplied by the number of miles traveled plus the daily wage of the driver will yield the cost of transporting the pupils of a one-teacher school district for one day.

The distance which pupils are transported is also an essential factor in determining transportation costs if conveyance-mile cost is to be taken as the basic factor for cost determination. It is proposed that pupils be transported from the site of the school building of their one-teacher district to the coöperative school building. This will necessitate ascertaining the distance between these two buildings in any given instance. If pupils are to be transported in accordance with this proposal, it will be necessary for them to assemble in the morning at the one-teacher school building. It is practical and possible for them to do so because in practice the driver of the conveyance would be required to be present at this site before the arrival of the first pupil. He would be vested with disciplinary power over the pupils so that he could properly supervise them. Moreover, during inclement weather the conveyance would be heated and inclosed so that pupils would be rendered comfortable from the time they should arrive at the site of the one-teacher building until they would be delivered at the coöperative school. At the close of the school day they would be taken to the site of the one-teacher school and be dismissed there. This method of transportation would not require pupils to walk farther than they and their predecessors have been accustomed to walk, nor would a much greater length of time be required for them to travel to and from their school than if they should attend the one-teacher school. Perhaps the time would be greater by ten to fifteen minutes both in the morning and in the afternoon as they would pass to and from school. The increase in time should be no greater than this because the travel distance for the conveyances would average 3.5 miles. At a speed of 20 miles an hour, the time required to traverse the distance should be no greater than 15 minutes.

Ordinarily this method of transporting pupils might be objectionable in a consolidated district. It would not be so, at least for the same reason, in a Coöperative School Area. In some consolidated districts as many as two or more tiers of one-teacher schools may encircle the central school district. This renders it possible, practicable and economical in some instances for one conveyance to transport the pupils of several one-teacher districts. Because of this fact it is impossible for the driver to supervise all the children at the place of assembling because there would be several such places—at least as many as there would be one-teacher districts. For the same reason, all the pupils could not be protected from inclement weather. While for the purpose of this study it is proposed that pupils be transported from and to the sites of the one-teacher schools, many variations would occur in practice. As an example of such variations, children living along the road traversed by the conveyance would wait for it at their homes. A second variation might involve transporting the pupils from and to their homes whenever the weather should be inclement. Since the basic considerations for determining costs are to be conveyance-mile cost and driver's wages, adjustments could very readily be made for any such variations.

The varying number of children to be transported from different one-teacher districts demands the employment of conveyances of differing capacities if transportation is to be provided economically. In some instances not more than two pupils would require transporting. In others provision would be required for perhaps as many as 25. While a conveyance with a capacity of an ordinary school bus would be employed to care for the 25 pupils, it is very evident that a much less expensive conveyance could care for the two pupils adequately and much more economically. For this reason it is proposed that per mile conveyance costs be ascertained for three types of conveyances selected on the basis of their pupil capacity and economy of operation. These are Ford or Chevrolet coach or sedan types of automobiles, Ford or Chevrolet station wagons, and standard school busses. It is proposed to use the coach or sedan type of automobiles for transporting a maximum of six pupils, a station wagon for transporting from seven to ten pupils inclusive, and school busses for more than ten pupils.

The problem now becomes that of determining the total per mile operation cost for each of these three types of conveyances. The method pursued for ascertaining these probable costs is an indirect one for the first two types and a direct method for ascertaining the probable costs for operating school busses. No record of experience in transporting children in Kansas in automobiles or in station wagons was discovered. There is, however, a limited amount of accurate and dependable data available concerning bus transportation costs.

To determine the probable per-mile costs for the use of coach and sedan types of automobiles, the experience of Kansas teachers of vocational agriculture has been employed. The roads over which these teachers travel are in a fair degree comparable to those which would be traversed in transporting pupils in Coöperative School Areas. Moreover, these teachers use Ford and Chevrolet automobiles more generally than any other make of car. Through the coöperation of Mr. L. B. Pollom, state supervisor of vocational agriculture for Kansas, it was possible to obtain cost data from a number of teachers of vocational agriculture from which the per-mile cost of operating their automobiles could be calculated.

A blank, a copy of which appears in the Appendix on page 120, was mailed by Mr. Pollom to the teachers of this subject in the state. Eighty replies were returned, not all of which, however, were usable. It was found possible to make full or partial use of the reports for 9 Ford sedans, 6 Ford coaches, 4 Chevrolet sedans, and 16 Chevrolet coaches, or a total of 35 automobiles.

These reports were submitted by teachers in the following counties, whose location may be learned by reference to the map on page 12:

Barber
Comanche
Pottawatomie
Jefferson
Trego
Linn
Chase
Shawnee
Gove
Wilson
Leavenworth
Clay
Rooks
Sedgwick
Cheyenne
Labette
Ford
Neosho
Morton
Coffey
Cherokee
Riley
Johnson
Scott
Lincoln
Osage
Marshall
Stafford

The cost of operating these cars was given by the teachers who submitted the reports. The length of time which the costs covered extended from seven months to five years immediately preceding February 1, 1933, with a median length of two years. Total costs included expenditures for gasoline, oil, grease, tires, repairs, insurance and depreciation. Depreciation was determined by deducting the estimated allowance which would be received in exchange for a new car from the original cost of the car now possessed at Manhattan, Kansas, as given by the local agents of the Ford and Chevrolet motor companies located in that city. The depreciation per mile was then found by using the number of miles which the car had traveled. In some few cases teachers reported the per mile cost of operation including depreciation. The itemized per-mile costs are shown in detail in Tables XII and XIII.

TABLE XII.—Per-mile cost in cents of operating Ford sedans and coaches operated by vocational agriculture teachers

CAR DESIGNATION.	Per-mile depreciation cost.	Per-mile operation cost.	Total cost per mile.
Sedan:			
No. 1	1.23	3.50	4.73
No. 2	1.48	4.60	6.08
No. 3			3.20
No. 4			5.00
No. 5			4.00
No. 6			3.94
Median			4.36
Coach:			
No. 1	1.26	2.50	3.76
No. 2	.95	1.00	1.95
No. 3	1.90	1.66	3.56
No. 4	1.60	3.00	4.60
No. 5	1.19	5.00	6.19
No. 6	1.90	2.00	3.90
Median	1.43	2.25	3.83

This table is read to mean that the depreciation per mile on car No. 1 was 1.23 cents; the cost of operation, 3.50 cents; and the total cost per mile, 4.73 cents. The rest of the table and Tables XIII and XIV are to be read in a similar manner.

Reference to Table XII shows that the total median cost for operating a Ford sedan was 4.36 cents per mile and for a Ford coach 3.83 cents per mile. For the Chevrolet sedan and coach the median costs were 4.58 cents per mile and 3.65 cents per mile respectively. When Ford and Chevrolet sedans are grouped together, the median cost is 4.58 cents per mile and the third quartile

TABLE XIII.—Per-mile cost in cents of operating Chevrolet sedans and coaches operated by vocational agriculture teachers

CAR DESIGNATION.	Per-mile depreciation cost.	Per-mile operation cost	Total cost per mile.
Sedan:			
No. 1	1.10	6.00	7.10
No. 2	1.43	2.30	3.73
No. 3	2.00	2.50	4.50
No. 4	1.86	2.80	4.66
Median	1.64	2.45	4.58
Coach:			
No. 1	2.10	2.80	4.90
No. 2	1.10	4.00	5.10
No. 3	1.00	1.80	2.80
No. 4	1.34	1.84	3.18
No. 5	1.61	2.20	3.81
No. 6	1.00	2.50	3.50
No. 7	1.25	1.50	2.75
No. 8	.82	2.00	2.82
No. 9	1.50	1.60	3.10
No. 10	1.00	3.50	4.50
No. 11	1.50	4.00	5.50
No. 12	....	....	3.00
No. 13	2.42	1.02	3.44
No. 14	1.32	4.00	5.32
No. 15	2.43	4.00	6.43
No. 16	1.55	2.50	4.05
Median	1.42	2.50	3.65

is 4.86 cents. It is therefore proposed to regard 5 cents, which is so close to the third quartile cost for sedans and coaches, 4.86 and 4.90 cents respectively, as the total per-mile operating cost for these automobiles.

Five cents per mile seems to be a sufficiently liberal allowance in the light of other facts which were discovered. Magill[1] conducted a study in Virginia to determine the per-mile costs of operating the automobiles of 17 vocational agriculture teachers of that state for the period, October 1, 1930, to September 30, 1931. Six Chevrolet coupes, one Chevrolet whose type is not stated, three Essex coupes, one Hudson sedan, one Studebaker coupe, one Pontiac sedan, one Ford T coupe, one Ford whose type is not given, one Plymouth whose type is not given, and one Graham coupe were included in the study. For the 17 cars regarded as a group, Magill found that "the total actual cost was 4.8 cents per mile."[2] He also discovered that "New automobiles of the Chevrolet and Ford type valued at $600 to $800 in this study showed the most economical costs, namely, 4.1 cents per mile."[3] From his study he concludes that "Chevrolets and Fords maintained with care should operate efficiently at less than 5 cents a mile up to 40,000 to 50,000 miles."[4]

For the period, January 1, 1930, to June 30, 1930, C. S. Hutchison, district supervisor of vocational agriculture for Ohio, made a study of the costs for travel of teachers of vocational agriculture in that state. His study included

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[1] Magill, Edmund C. *A Study of the Cost of Travel for Teachers of Agriculture.* Virginia Polytechnic Institute, Department of Agriculture, Department M, January, 1932. Blacksburg, Virginia, p. 1.

[2] Ibid., p. 5.

[3] Ibid., p. 5.

[4] Ibid., p. 6.

43 cars, of which 29 were either Fords or Chevrolets.[5] The total operation costs investigated included costs for "gasoline, oil, tires, storage, accessories, license, repairs, miscellaneous costs, depreciation and interest on investment."[6] For 14 cars[7] driven from 6,206 to 8,215 miles with an average distance of 7,031 miles, the average per-mile cost was 3.01 cents per mile. The cost was 4.8 cents per mile for 15 cars[8] driven from 5,022 to 6,205 miles with an average distance of 5,722 miles. Fourteen cars were driven from 1,620 to 4,961 miles, with an average distance of 4,027 miles at a per-mile cost of 5.4 cents.[9]

Terry[10] found that 175 cars were employed for transporting pupils in Alabama during the school year 1929-1930, at an average cost per day of $1.53. The average per-day cost for transporting pupils according to the method proposed in this study for arriving at transportation costs would be $1.44 per day.

The Kansas State Board of Agriculture has kept careful records of the cost of operating 13 cars owned by the board and driven by its agents during the period, July, 1923, to June 1, 1932. The per-mile costs embrace all costs to the department, including depreciation. These costs are not entirely the same as they would have been for an individual owner because the state did not pay a license fee nor did it carry insurance on the cars. Otherwise, the costs are comparable with those which would have been incurred by a private individual. Table XIV contains the pertinent data relative to the costs of operating these cars.

The Division of Coöperative Extension Work in Agriculture and Home Economics of the Kansas State College of Agriculture and Applied Science finds that the "Average Cost of Operating the County Agent Cars in Kansas . . ."

TABLE XIV.—Per-mile cost of operating automobiles by agents of the Kansas State Board of Agriculture*

TYPE OF CAR.	Period operated.	Cost per mile.
Ford coach	August 23, 1929, to November 6, 1930	$0.0301
Ford coach	December 24, 1929, to January 12, 1931	.034
Ford coach	January 18, 1930, to February 25, 1931	.026
Ford coach	January 31, 1930, to March 19, 1931	.032
Ford coupe	November 12, 1929, to November 25, 1931	.029
Ford sedan	August 27, 1930, to December 24, 1931	.034
Ford sedan	October 8, 1930, to May 5, 1932	.035
Ford touring	July, 1923, to July, 1925	.039
Ford roadster	July 7, 1925, to October 5, 1927	045
Chevrolet coupe	October 5, 1927, to December 6, 1929	.038
Chevrolet coupe	July 15, 1927, to July 15, 1929	.037
Pontiac coupe	May 15, 1929, to January 20, 1932	.0308
	Mean per mile cost	$0.0342
	Median per mile cost	.034

* Mohler, J. C., secretary, Kansas State Board of Agriculture. Personal letter. Topeka, Kansas.

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[5] Hutchison, C. S. "A Study of the Cost of Transportation of Vocational Agriculture Teachers in Ohio." Manuscript. Provided by H. G. Kenestrick, Assistant Professor of Agricultural Education, the Ohio State University, Columbus, Ohio, p. 5.

[6] Ibid., p. 1.

[7] Ibid., p. 9.

[8] Ibid., p. 10.

[9] Ibid., p. 11.

[10] Terry, William Jefferson. "The Costs of School Transportation in Sixty-four Counties in Alabama." An unpublished Master's Thesis on file at the University of Alabama, 1931, p. 25.

is about 3.5 cents per mile.[11] "This includes depreciation and all operating costs."[12] Seventy-eight county agents and assistant county agents are employed in seventy-seven counties.

The experience of certain Kansas consolidated school districts in providing transportation for their pupils has been chosen as the basis of calculation to determine the per-mile cost for school busses which it is proposed would be employed if more than ten pupils should require transportation from a one-teacher school district included in a Coöperative School Area. Dr. C. E. Rarick, professor of rural education of the Fort Hays Kansas State College, conducted a study of transportation costs in consolidated school districts for the seven-year period, 1922-1923 to 1928-1929 inclusive. The number of districts included in the study varied from 22 during the first year of the period to 13 during the last year. The total number of miles traveled was from 360,813 to 558,584. Seventy-four to one hundred and seven busses were employed during different years. The report[13] of the investigation is presented in detail for seven districts which kept records for each of the seven years of the period. For this reason it is possible to determine the per-mile cost for each of these seven districts only throughout the full period.

Rarick shows the total cost including current operating costs, depreciation, and drivers' wages for each district separately. From his old records he was able, however, to supply the amount paid drivers in each district, so that it has been possible to determine the total per-mile cost of transportation in these seven districts exclusive of drivers' wages. The pertinent facts for these districts for the last year of the study, 1928-1929, are shown in Table XV.

The busses employed during the years 1927-1928 and 1928-1929 were five

TABLE XV.—Transportation costs in seven consolidated school districts of Kansas, 1928-1929*

DISTRICT.	Total cost.	Drivers' wages.	Operation costs without drivers' wages.	Number of miles traveled.	Cost per mile without drivers' wages.
Brewster	$3,559.30	$1,575.00	$1,984.30	24,829	8.00 cents
Holcomb	8,064.00	2,232.00	5,832.00	73,837	7.90 cents
Oakley	8,997.82	2,250.00	6,747.82	57,777	11.68 cents
Palco (*a*)	2,376.87	1,620.00	756.87	12,997	5.82 cents
Plains	4,695.45	1,733.42	2,962.03	27,556	10.75 cents
Quinter	3,874.38	1,800.00	2,074.38	28,978	7.15 cents
Winona	2,834.73	1,440.00	1,394.73	26,850	5.20 cents
Total	$34,402.55	$12,650.42	$21,752.13	252,824	
Median					7.90 cents
Mean					8.07 cents

* Rarick, C. E. *A study of Transportation Costs in the Schools of Western Kansas* (in district owned conveyances). Kansas State Printing Plant, Topeka, Kansas. 1929, pp. 20-22.
(*a*) For 1927-1928.

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[11] and 12. Turner, A. F., district agent at large, Division of Coöperative Extension Work in Agriculture and Home Economics of the Kansas State College of Agriculture and Applied Science. Manhattan, Kansas. Personal communication.

[13] Rarick, C. E. *A Study of Transportation Costs in the Schools of Western Kansas* (in idstrict-owned conveyances), 1929. Kansas State Printing Plant, Topeka, Kansas, 23 p.

International, four Ford, five Reo, one Graham, one Chevrolet, and one bus whose name is not known. The names for the two years are given because the information available did not clearly distinguish between the two. In this same report[14] Rarick gives a limited amount of information in relation to thirteen consolidated school districts for 1928-1929, including the facts that 360,813 miles were traveled at a total cost of $47,686.99. In a personal communication to the writer, Dr. Rarick supplied the wages for drivers in all thirteen districts, which amounted to $17,945.43. The difference between this amount and $47,86.99, or $29,741.56 divided by 360,813, yields 8.24 cents or the mean per-mile cost for operation exclusive of drivers' wages.

Through the coöperation of Dr. Rarick the writer conducted an investigation of transportation costs in a number of consolidated school districts in Kansas for the school year 1930-1931. Requests for reports on these costs were made to 40 principals and superintendents of consolidated schools. Usable replies were returned by 15. These school officers reported the names, numbers of, and costs of the busses which were employed in their districts. They also reported the number of miles traveled by each bus, the wages paid to the drivers, and the operating costs including costs of gasoline, grease, oil, tires, and repairs but not including depreciation. Depreciation was estimated on the basis of 15 per cent per year, the basis for depreciation used by Rarick in his study of costs during the period 1922-1928. Since insurance charges were not reported, these charges were approximated by applying the insurance rates in Kansas on school busses—$1 per $100 insurable value for fire and transportation protection, 15 cents per $100 insurable value for protection against theft, and 10 cents per $100 of insurable value for protection against wind and tornado damage—to one-half the reported cost. One-half the cost of the busses was taken as the base for calculation because in the absence of knowledge of the present value of the busses it was assumed that this was half the original cost because it was assumed that the busses had traveled half the number of miles that they were capable of traveling. With these items of information available, it was possible to determine the per-mile total cost of operating these busses, exclusive of the wages of drivers. The pertinent data appear in Table XVI.

Since the per-mile cost for 73 per cent of the districts was 9.43 cents or less, it is proposed to use 10 cents as the per-mile cost if more than ten children must be conveyed. This amount seems to be sufficiently liberal in view of the fact that in Rarick's study of transportation costs for seven districts in 1928-1929 he found that 71 per cent of the districts had costs of 8 cents per mile or less, and he found that for the thirteen districts the average per-mile cost was 8.24 cents. The state superintendent of public instruction of North Carolina published a report[15] of a study of transportation costs for the school year 1927-1928 in which the per-mile cost for operating the "trucks" including all costs except drivers' wages was found to be 10.7 cents, as derived from the data presented in the report. The number of pupils transported daily was 135,872. They were transported 77,819 miles daily for an average of 156 days at a total cost, excluding drivers' wages, of $1,299,343.

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[14] Ibid., pp. 21-22.

[15] State Superintendent of Public Instruction of North Carolina. *State School Facts.* April 15, 1929, Volume V, No. 15, Raleigh, North Carolina.

TABLE XVI.—Cost items for transporting pupils in fifteen consolidated school districts in Kansas during 1930-1931

SCHOOL.	Number of busses.	Original cost of busses.	Depreciation 15 per cent of cost.	Insurance.	Operation cost exclusive of depreciation.	Total cost of operation.	Total miles traveled.	Total cost per mile.
Winona	4	$5,200	$780.00	$32.50	$1,046.00	$1,858.50	46,846	3.97
Lewis	5	9,399	1,409.85	58.74	953.56	2,422.15	27,980	8.66
Meade	1	1,350	202.50	8.44	127.81	338.75	6,825	4.96
Manning	2	1,245	186.75	7.78	286.85	481.38	11,700	4.11
Virgil	2	2,400	360.00	15.00	182.25	557.25	7,700	7.24
Colby	4	6,300	945.00	39.37	594.12	1,578.49	26,285	6.00
Maize	4	8,400	1,260.00	52.50	831.50	2,144.00	15,919	13.47
Plains	7	....	1,369.50	....	2,898.07	4,267.57	49,931	8.55
Brewster	5	5,950	892.50	37.18	837.16	1,766.84	28,916	6.11
Derby	1	1,000	150.00	6.25	90.00	246.25	2,880	8.54
Long Island	3	4,800	720.00	30.00	900.00	1,650.00	14,850	11.11
Chase	2	2,200	330.00	13.75	251.24	594.99	9,904	6.01
Ruleton	2	3,600	540.00	22.50	399.45	961.95	6,229	15.44
Alton (*a*)	5	....	....	....	....	2,025.00	21,472	9.43
Wayside (*b*)	2	2,680	402.00	16.75	950.56	1,369.31	9,451	14.47
Total	49	....	$9,548.10	$340.76	$10,348.57	$22,262.43	286,888	....
Median	....	....	....	....	....	....	....	7.89
Mean	....	....	....	....	....	....	....	8.47

(*a*) Contracted transportation; not included in determining means, medians and quartiles.
(*b*) $761.58 spent for maintenance and repairs.

A study of school transportation in South Carolina for the school year 1930-1931 was made by H. L. Fulmer, director of the Division of Information and Research of the South Carolina Department of Education. The study[16] involved 1,669 busses which transported 43,958 pupils. The average cost per bus mile was 15 cents. Fulmer does not state what part of this cost was represented by wages paid to drivers. In Rarick's study, however, it was found that drivers' wages represented 36.77 per cent of the total cost. This percentage of 15 cents is 5.51 cents, which deducted from 15 cents leaves 9.49 cents per mile for all other operation costs. Another method of approximating the operation costs per mile excluding drivers' wages is to allow an arbitrary wage to the average driver and then from a knowledge of the average length of routes in miles derive an approximate wage per mile. If drivers were to be allowed $1 per day, which it seems would be the minimum, the wage per mile would be 4.34 cents, since Fulmer found that the average length of routes was 23 miles. Fifteen cents less 4.34 cents is 10.64 cents per mile for other operating costs if it is assumed that drivers were paid $1 per day.

Terry found that the average cost per bus mile in his study[17] of transportation costs for Alabama was 18.9 cents including drivers' wages and depreciation taken as 16.6 per cent of the cost of a given bus. In calculating the bus-mile cost, however, he took no cognizance of the miles traveled when no children were being carried, for he states, "The bus mile is used to denote the travel of the bus one mile with pupils aboard. No account is taken of the travel of the bus while not carrying pupils. . . . The length of route of a bus is understood to be the distance from the home of the pupil who lives farthest from school, to school and return."[18] While there is no method of ascertaining the exact relation between the true number of miles which a given bus traveled and the number of miles employed by Terry in making his calculations, it is reasonable to suppose that he took into consideration only approximately half the total number of miles actually traveled, because if the bus were stored during the night near the school building it patently could travel approximately half the distance traversed empty because in going to the home of the pupil who lived farthest from the school building it would carry no pupils nor would it carry any when returning from distributing the pupils at the close of the school day. It would seem reasonable, therefore, to believe that the true per-mile cost for each mile traveled by a given bus would be approximately one-half of 18.9 cents, or 9.45 cents.

It is proposed to employ Ford or Chevrolet station wagons for transporting pupils if their number should be from seven to ten inclusive, since these station wagons really serve the purpose of small busses, but cost much less than school busses. Their cost in Manhattan, Kansas, ranges between $706 and $725. The cost of the Ford school bus at Kansas City, Missouri, is $1,369. The cost of operating station wagons should be much less than the cost of operating school busses, since for the Ford the chassis of a sedan is used and for the Chevrolet the chassis of a one-half ton truck is used. Since no direct evidence was discovered to throw light upon the cost of operating a station wagon, it is proposed to use for the purpose 5.5 cents, which is practically the first quartile cost for operating busses as discovered by the writer in the study made of bus costs for which data are presented in Table XVI. This quartile cost was found to be 5.48 cents per mile. When compared with the per-mile cost for operating Ford and Chevrolet coaches and sedans, it is found to be higher than the 80 percentile cost, which was 5.32 cents per mile.

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[16] Fulmer, H. L. "A Statistical Study of School Transportation Costs in South Carolina." Mimeographed Report. South Carolina Department of Education, Columbia, South Carolina, December, 1931, p. 3.

[17] Terry, William Jefferson. "The Costs of School Transportation in Sixty-Four Counties in Alabama." An unpublished Master's Thesis on file at the University of Alabama, 1930, pp. 8-9.

[18] Ibid., p. 9.

It is proposed to pay drivers of cars and station wagons at the rate of 75 cents per day for their labor, and bus drivers at the rate of $1 per day because more time would be required to care for a bus than for a car. These amounts seem reasonable in view of the fact that the median distance to be traveled would be 14 miles (3.5 x 4) and that for 1929 wages for farm labor in Kansas was $53.62 per month,[19] or $2.06 per day, assuming that 26 work days constitute a month. If the car should be driven at a speed not in excess of 20 miles per hour and the driver should wait for the pupils at the site of the one-teacher school for a period of 20 minutes, the average time required would be approximately 90 minutes per day. The proposed scale of wages, 75 cents a day, for the driver would be at approximately the rate of 50 cents an hour.

These different factors determinative of transportation costs can now be assembled into the following formulæ for arriving at the total annual transportation costs in dollars for transporting the pupils of any one-teacher district to the coöperative school of a Coöperative School Area.

1. If not more than six pupils are to be transported,

$$(a \times 4 \times .05 + .75) \times d$$

2. If seven to ten pupils inclusive are to be transported,

$$(a \times 4 \times .055 + .75) \times d$$

3. If more than ten pupils are to be transported,

$$(a \times 4 \times .10 + 1.00) \times d$$

a represents distance in miles from a one-teacher school to the coöperative school.

4 represents the number of times the conveyance will traverse the distance between a one-teacher school and the coöperative school per day.

.05, .055, and *.10* represent the cost per mile in cents.

.75 and *1.00* represent the wages of the drivers in dollars per day.

d represents the number of days for which transportation is provided.

The application of these formulæ is illustrated by the use of the following data:

Let 3.5 miles be the distance from the one-teacher school to the coöperative school.

Let 4 be the number of pupils to be transported.
Let 180 be the length of the school term in days.

Formula to be used: $(a \times 4 \times .05 + .75) \times d$.
Substituting: $(3.5 \times 4 \times .05 + .75) \times 180 = 261$.

The cost of transporting four children under the given conditions would be $261 for the school year of 180 days.

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[19] Yearbook of Agriculture. United States Government Printing Office, 1930, p. 1000.

Strictly Educational Costs

The strictly educational costs for the school of the Coöperative School Area will include current costs only. Since the plan does not demand significant capital or debt expenditures in addition to such charges borne by the schools when conducted separately, such costs should not be considered in determining costs for the coöperative school. It may be necessary for the constituent districts of the coöperative school districts to meet such charges, but not because of the coöperative school. It is conceivable and in some cases highly probable that at least debt charges have been incurred for the maintenance of schools in each of the separate districts and that the indebtedness involved has not yet been liquidated, but such indebtedness should not be considered as a part of the necessary expenditures for maintaining the coöperative school. One apparent exception may appear to this statement in case a one-teacher building should be moved to the site of the central school. For the purposes of this study the cost of the moving will be included among the current costs of the school of the Coöperative School Area.

The development of procedures for determining strictly educational costs must make provision for four situations, which are:

1. Coöperative School Areas with small graded schools as centers in which an additional teacher will not be required.
2. Coöperative School Areas with small graded schools as centers in which an additional teacher will be required and for whom a vacant room is already available.
3. Coöperative School Areas with small graded schools as centers in which an additional teacher will be required and for whom a classroom must be provided by moving a one-teacher school building to the site of the small graded school.
4. Coöperative School Areas in which the schools of a city of the first or second class will be the centers.

In Coöperative School Areas which do not require an additional teacher, the strictly educational costs will be practically the same as for the graded school before the coöperative area was organized. The cost of such items as administration, heat, light, and operation in general, and such items as maintenance, fixed charges, and auxiliary agencies will not necessarily be increased by the addition of a limited number of pupils to the enrollment. It is conceivable, however, that instructional costs would be increased to the degree that additional instructional supplies would be required for an increased enrollment. Such increase would be insignificant, however, because Kansas schools do not provide free textbooks and instructional materials for their pupils.

The determination of the current strictly educational costs is not a simple matter, however, from the data available which were secured from the county superintendents who in turn obtained them from the annual reports of the district clerks. The data blanks which the state superintendent of public instruction requested the county superintendents to prepare called for the total amount expended, the amount expended for current expenses, the amount expended for indebtedness, and the annual salary of teachers in the small graded schools. If the financial accounts of individual districts were efficiently kept and an accurate and dependable distribution of expenditures were made, it would be a simple matter to determine current expenses. However, such is not the case, as a brief examination of the returned blanks and the biennial report of the state superintendent of public instruction evidence. In the biennial report for 1929-1930 for the school year 1928-1929 the amount of $1,120,849 is listed as miscellaneous expenditures out of a total expenditure of $13,906,980.[20] For the following year, out of a total expenditure of $14,594,868,[21] the amount of $885,733.12 is charged to miscellaneous items for two- or more-teacher schools. For the year 1928-1929 for one-teacher schools, $436,275.80 out of a total expenditure of $7,661,673.37[22] was charged to miscellaneous items; for 1929-1930 the corresponding amounts were $418,183.90 and $7,810,029.[23] It is reasonable to believe that the total amounts given in the reports are much more nearly correct than the amounts given under the various subheadings of the accounting system. The teachers' salaries reported by the county superintendents are in all probability correct, because the district board files with the county superintendent a statement of the teacher's salary soon after the teacher has been employed. By employing these two amounts as bases of calculation, together with certain percentage relations which may be established from the biennial report of the state superintendent, it is possible to arrive at a close approximation of current expenditures in those cases where there seems to be reasonable doubt as to the accuracy of the detailed reports.

The biennial report of the state superintendent of public instruction for 1929-1930 gives detailed statistics from which the relation of expenditures for instructional service to total expenditures for current expenses can be calculated. For the school years 1928-1929 and 1929-1930 these percentages are found to be 70.22 and 70 per cent respectively for small graded two-teacher schools, and 75.24 and 75.45 per cent respectively for one-teacher schools. Since expenditures for instruction represent teachers' salaries almost exclusively, it is a close approximation to the truth to believe that in two- or more-teacher schools teachers' salaries represent 70 per cent of the total expenditures for current expenses, and in one-teacher schools 75 per cent of the total expenditures. It is to be remembered that the statistics from which these percentages are derived are subject to the same criticism offered relative to the amounts reported by the county superintendents for individual schools. However, because of the large number of cases, the errors in the total amounts for all schools of the two types tend to cancel one another.

With these items of information available, it is possible to make certain corrections in the reports submitted. If the total expenditures appear to be so great that teachers' salaries are below 70 per cent and 75 per cent of the total expenditures for the small graded and the one-teacher schools respectively, corrections are made. This is done, however, only when the expenditure for teachers' salaries falls below 64 per cent and 70 per cent respectively of the total expenditures for small graded and one-teacher schools. This allows current expenditures other than expenditures for teachers' salaries to become 20 per cent greater than the average determined from the biennial report, as just stated.

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[20] Twenty-seventh Biennial Report of the State Superintendent of Public Instruction of Kansas, 1929-1930, p. 218.

[21] *Ibid.*, p. 454.

[22] *Ibid.*, p. 214.

[23] *Ibid.*, p. 450.

The report for District No. 38, a one-teacher district of Atchison county, may be used to illustrate the application of this procedure. The total amount expended was reported to be $1,328.95; of this amount $141.24 was reported as representing current expense. The teacher's salary was reported to be $760. Manifestly, the amount reported for current expense, $141.24, is incorrect if the teacher's salary, $760, is correct, which is probably true. Hence, by dividing $760 by .70, a quotient of $1,086 is obtained: Since $1,086 is less than $1,328.95, the total amount of expenditure, it is assumed that it contains items not properly belonging in the classification of current expenditures. It probably includes expenditures for capital outlay or for indebtedness. Consequently, to find the probable true current expenditures, $760 is divided by .75, which yields a quotient of $1,013. Therefore, $1,013 is regarded as the total amount expended for current expenses in District No. 38.

The strictly educational costs of a Coöperative School Area for which an additional teacher must be employed and which has a vacant classroom are determined by adding to the costs obtained by following the procedure for cost determination for a coöperative school not requiring an additional teacher, as just described, the amount obtained by dividing the average salaries of teachers in the graded school of the Coöperative School Area by .70. For example, if the expenditures for current expenses in a graded school whose teachers received an average annual salary of $980, was $9,000, and an additional teacher were required in organizing a Coöperative School Area, the increased cost incurred would be obtained by dividing $980 by .70, which would give $1,400 as the amount of this additional cost.

If in a few cases an additional classroom should be required, it would be provided by moving one of the one-teacher school buildings of the Coöperative School Area to the site of the central graded school. The cost of doing so would then be added to the costs as determined for a coöperative school in which a vacant classroom might be used. No very extensive information was discovered to throw light upon what the cost of moving such a building would be. It was discovered that in District No. 48 in Neosho county, about July 12, 1932, a one-teacher school building was moved a distance of four and one-half miles at a cost of $95. It was placed upon a foundation of tile blocks resting upon a concrete wall 10 inches wide and 20 inches deep.[24] The blocks cost $27.72. It was not possible to determine the cost of building the concrete foundation and laying the blocks, yet it seems reasonable to believe that the total cost of moving the building and placing it on the new foundation was not in excess of $150. The board of education in Wellington, Kan., during 1930, moved six one-teacher school buildings and replaced them on new foundations at a cost of $135 per building. The writer requested a contractor of Lincoln, Kan., who has had extensive experience in moving buildings, to make a careful estimate of the cost in 1930-1931 of moving a given one-teacher building near Lincoln to a given school site in Lincoln, a distance of three miles, and of placing it on a new foundation. His estimate was $246. In the light of this very limited information, it seems that a reasonable allowance for moving a one-teacher school building and placing it on a new foundation would be $150.

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[24] Information supplied by C. E. Yorkey, Clerk of District No. 48, and O. P. Caldwell, Superintendent of Schools, Erie, Kan.

The division of costs between the one-teacher districts and the graded school district included in a Coöperative School Area would be made according to this formula:

$$a \frac{c+d}{a+b_1+b_2+\ldots\ldots b_n}$$; cost of coöperative school for District A

$$b_1 \frac{c+d}{a+b_1+b_2+\ldots\ldots b_n}$$; cost of coöperative school for District B_1

$$b_2 \frac{c+d}{a+b_1+b_2+\ldots\ldots b_n}$$; cost of coöperative school for District B_2

$a =$ cost for current expenses of small graded school for the year before the Coöperative School Area is organized.

$b_1, b_2, \ldots b_n =$ cost for current expenses for the respective one-teacher schools the year before the Coöperative School Area is organized.

$c =$ strictly educational costs for the coöperative school.

$d =$ transportation costs for the coöperative school.

An example of the application of this formula in a given situation is shown as follows:

Let A, B_1, and B_2 represent three school districts included in a Coöperative School Area, with a representing the cost of the graded school and b_1 and b_2 the cost of the one-teacher schools respectively.

Let $8,000 represent the cost for current expenses in District A for the year prior to the organization of the Coöperative School Area.

Let $1,025 and $975 represent the cost of current expenses for the one-teacher schools, B_1 and B_2 respectively.

Let $8,000 represent the strictly educational costs for current expenses of the coöperative school, since no new teachers are required.

Let $600 represent the cost of transporting the pupils of Districts B_1 and B_2.

Then, by substitution—

$$a \frac{c+d}{a+b_1+b_2}$$ = cost to graded school district for the coöperative school for current expenses.

$$b_1 \frac{c+d}{a+b_1+b_2}$$ = cost to one-teacher school, B_1, of Coöperative School Area for current expenses.

$$b_2 \frac{c+d}{a+b_1+b_2}$$ = cost to one-teacher school, B_2, of Coöperative School Area for current expenses.

$$\$8{,}000 \frac{\$8{,}000 + \$600}{8{,}000 + 1{,}025 + 975} = \$6{,}880$$

$$\$1{,}025 \frac{\$8{,}000 + \$600}{8{,}000 + 1{,}025 + 975} = \$881.50$$

$$\$975 \frac{\$8{,}000 + \$600}{8{,}000 + 1{,}025 + 975} = \$838.50$$

Hence, the cost of the coöperative school to the graded school district would be $6,880, and to the two one-teacher schools, $881.50 and $838.50 respectively. The reduction in costs would amount to $1,120 for the graded school district, and $143.50 and $136.50 to the respective one-teacher districts.

Cost Determination When City Schools Become the Coöperative Schools

A number of cities of the first and second class and one-teacher school districts are so situated that the city schools could become the coöperative schools of Coöperative School Areas. In these cases, however, because the conditioning factors are so much at variance with those found where small graded schools could become coöperative schools, it would be desirable to determine costs in a materially different manner from that employed if small graded schools should become the coöperative schools. The reasons for this will be explained in detail later. For such Coöperative School Areas two types of cases are involved: first, those situations in which the enrollment in the city schools is so low that the present teachers could care for a larger number of pupils; and, second, those situations in which one or more vacant rooms would be used.

It is proposed that the maximum enrollment for a city elementary school be regarded as the third quartile of the mean enrollments of elementary grades for the school year 1930-1931 for all city elementary schools in Kansas. This has been found to be 38. Hence, it will be assumed that any city whose average enrollment for the elementary schools for 1930-1931 was lower than 38 could accommodate as many more pupils as would be required to raise the mean enrollment to 38.

It is proposed that the total cost to one-teacher school districts be 80 per cent of the cost of such schools for the preceding year. To determine the payment which would be made to the city school board of a Coöperative School Area, from 80 per cent of the cost of the one-teacher school should be substracted the cost of transportation as calculated according to the procedure developed in this chapter. The remainder would be paid to the city school board. To illustrate the application of the method:

Let $962 represent the cost of the one-teacher school the year before the organization of the Coöperative School Area.

Let $382 represent the costs for transportation.

Then, .80 of $962 = $769.60, the total cost to the one-teacher school for the coöperative school.

$769.60 — $382 = $387.60, the amount to be received by the city school board.

This represents the median type of case, which may be learned by reference to the table on page 11 where it is stated that the median salary of teachers in the one-teacher schools was $722. This, divided by .75, gives $962 as the estimated cost of current expenses for the median school. This median school is also considered located 3.5 miles from the graded school, and as having an enrollment of 14 pupils. These data have been employed in the example. The amount received by the city school board would be $27.66 per pupil. The average charge made by such boards during 1930-1931 was $32 per pupil for elementary tuition pupils. In no case would the charge be greater than the actual per pupil cost in the city schools.

If a city school system should have available vacant rooms, one or more of which would be required to accommodate pupils from the one-teacher schools of the Coöperative School Area, these schools would be charged the actual cost for current expenses for maintaining such additional rooms. If a part of the pupils of the one-teacher schools should be cared for in rooms that had not enrolled the maximum permitted number, and the others should be cared for in the additional room or rooms, the costs would be determined by subtracting the cost of maintaining the additional room or rooms from the cost of current expenses of the one-teacher schools during the preceding year, and then employing the method used in determining costs in the first type of case to the difference. As an example:

Let $6,000 represent the current expenses of maintaining the one-teacher schools the previous year.

Let $2,000 represent the cost of maintaining the additional room.

Let $1,000 represent the cost of transportation.

Then, [($6,000 — $2,000) .80] — $1,000 or $2,200 would be the amount received by the city school board.

This method of determining costs in those cases in which city schools are the coöperative schools of a Coöperative School Area rather than the method employed in situations in which a small graded school is the coöperative school is due to the fact that by the application of that method the reduction in costs for the one-teacher schools would be so low as to be unattractive to its people. At the same time, any charge made by a city board of education for teaching the pupils of such a district represents a net financial gain for the city, however small the charge may be. Hence, the method just outlined has been adopted because it assures the one-teacher district a reduction in current expenditures of at least 20 per cent, unless an additional classroom would be required, and thereby offers a financial inducement to the people of a one-teacher school district to enter the Coöperative School Area. Just how the employment of this method of determining costs is to be used in the case where city graded schools will serve as coöperative schools, and its advantages, may be illustrated by taking Manhattan and the one-teacher schools located within a radius of five miles distant from it as a case in point. Four one-teacher schools, with enrollments of 8, 11, 16, and 35 pupils respectively, lie 4, 3, 5, and 3 miles distant respectively. The total cost for current expenditures for these schools during 1930-1931 was $4,120.67. The current expenditures in Manhattan for the same year amounted to $84,065. The cost for transporting the pupils from these four one-teacher schools to Manhattan would be $1,585.80. The cost of the Manhattan elementary schools and of these four one-teacher schools combined was $88,185.67. The cost of the coöperative school would be $85,650.80 ($85.065 + 1,585.80). The cost of the coöperative school would be 97 per cent of the cost to the separate constituent districts. This represents a reduction of 3 per cent, which would represent reductions of $29, $28, $30, and $36 to the four one-teacher districts respectively, and of $2,522 to Manhattan, instead of $195, $189, $199, and $243 respectively for the one-teacher districts, and $2,123 for Manhattan, which would result from the use of the method proposed.

Summary

1. Formulæ for determining the cost of transporting pupils from any one-teacher school to the central graded school of any Coöperative School Area are proposed, based upon the factors of cost per conveyance-mile, wages of drivers, number of pupils to be transported, and distance in miles between the one-teacher schools and the central graded school of a Coöperative School Area.

2. Procedures for determining the strictly educational costs of the school of the Coöperative School Area and for dividing them have been developed.

CHAPTER VI

Determination of the Maximum Enrollment for Schools Employing Different Numbers of Teachers

The proposal for the organization of Coöperative School Areas is based upon the assumption that at present there are a number of graded schools enrolling fewer pupils than the number who can be taught satisfactorily, and the additional fact that some of these schools have vacant classrooms. It is proposed to increase the enrollment in present classrooms of all schools where it is below a satisfactory minimum number and to make use of vacant classrooms for caring for the pupils of one-teacher schools located within a radius of five miles of the graded schools. The assumption that some graded schools could enroll more pupils necessitates the determination of a standard maximum number of pupils who should be assigned to a teacher under given circumstances if effective education is to result. Since the graded schools which might be included in the Coöperative School Areas vary in the number of teachers whom they employ, from two to as many as thirty-five at least, it becomes necessary to determine the maximum number of children who should be enrolled in a school of from two to sixteen teachers because it is logical to believe that the total enrollment may vary with the number of grades assigned to each teacher as Kansas schools and curricula are now organized.

At least two general procedures are available for determining these desirable standards. One is to discover the solution which has been found by other workers on the subject and to accept their findings for use in this study. The second is to conduct such original research as will give a direct answer to the problem. A survey of the literature devoted to the subject of class size has not revealed anything that has a definite and specific bearing on the matter. Studies have been made, research conducted, and experiments performed to determine the relation of achievement to class enrollment, but so far as has been discovered the investigations have been conducted with pupils or students attending graded schools in which one grade only is assigned to a teacher, secondary schools, or institutions of higher learning. This past work has been even more restricted frequently to achievement in only single subjects. The problem to be solved in determining an optimum maximum number of pupils to be assigned to a teacher with two or more elementary grades is more complicated. The two elements of several grades and a number of different subjects to be taught by the same teacher necessarily render it so.

The accelerating movement for equalizing the financial responsibility for the support of education has involved the acceptance of the principle that the equalization of financial support must bear a direct and definite relation to the number of teachers employed in a given school. This in turn demands the determination of some pupil-teacher ratio to serve as the basis of equalization. Dr. Paul Mort, the leader in this movement, has developed a technique for determining this ratio on the basis of the weighted pupil. In its application, the degree of state financial assistance is related directly to the number of teaching units which depend upon a definitely determined number of weighted pupils varying with the total average daily attendance of a given school. This number, however, bears no necessary relation to the number of pupils who should be assigned to an individual teacher for optimum educational efficiency. Rather, the number of weighted pupils who shall be regarded as equivalent to one teaching unit has been determined from current practice in the respective states in which the technique is employed or for which it has been recommended. The basic assumption is that the state should support financially schools on the basis of the number of pupils now assigned to a teacher in the average district of each general type or size of elementary schools.

For Kansas, Doctor Mort has recommended the following method of determining the "standards for elementary teaching units based upon average daily attendance of average districts in Kansas."

> "One-teacher elementary schools: One elementary teaching unit shall be counted for each 22 pupils in average daily attendance, unless such school is certified by the State Department of Education as a necessary part of the school organization, it shall be counted as one elementary teaching unit regardless of its average daily attendance.
>
> "Other elementary schools with average daily attendance below 85: In elementary schools having more than one teacher for grades one to eight and an average daily attendance less than 85, count two elementary teaching units for the first 35 such pupils in average daily attendance in grades one to eight, and one for each additional 25 such pupils in average daily attendance in excess of 32.
>
> "Other elementary schools with an average daily attendance ranging from 85 to 420: In elementary schools having an average daily attendance of 85 or more, but not more than 420, count four elementary teaching units for the first 85 such pupils in average daily attendance in grades one to eight, and one elementary teaching unit for each additional 29 such pupils in average daily attendance in excess of 85.
>
> "Other elementary schools having an average daily attendance above 420: In elementary schools having an average daily attendance in grades one to eight of more than 420, count one elementary teaching unit for each 27 such pupils in average daily attendance."[1]

To convert these numbers for average daily attendance to the basis of enrollment, it is necessary to divide the respective numbers by the ratio that average daily attendance bears to enrollment. In Kansas for 1930-1931 this was .829 for one-teacher schools and .848 for small graded schools.[2]

Doctor Mort has also made recommendations for equalizing the cost of public education in Missouri, Nebraska, and Ohio. Table XVII shows a comparison of the average daily attendance of pupils for each of these states and Kansas as it relates to the number of pupils in schools employing different numbers of teachers.

A study of present practice in Kansas for the types of schools included in this study for the school year 1930-1931 gives the facts revealed in Table XVIII.

A similar tabulation of the average daily attendance in Nebraska elementary schools for 1930-1931 was prepared by the Nebraska State Department of Public Instruction. This tabulation is shown in Table XIX.

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[1] Mort, Paul R. *Report of the State School Code Commission of Kansas,* Supplement to Volume II, October 3, 1928, p. 13.

[2] Twenty-seventh Biennial Report of the State Superintendent of Public Instruction of Kansas, 1929-1930, p. 553.

TABLE XVII.—Average daily attendance recommended by Mort as the basis of equalization of educational costs for Kansas, Missouri, and Ohio

STATE.	Number of teachers employed.							
	One.	Two.	Three.	Four.	Five.	Six.	Seven.	Eight.
Kansas (a):								
Enrollment*.....	26	45	70	101	134	170	203	236
Average daily attendance....	22	35	60	85	114	143	172	200
Missouri (b):								
Average daily attendance....	....	44	70	96	132	167	202	244
Nebraska (c):								
Average daily attendance....	30	35	65	95	125	155	185	215
Ohio (d):								
Average daily attendance....	....	54	82	110	145	180	215	247

* Converted from figures for Average Daily Attendance.

(*a*) Mort, Paul R. *Report of the State School Code Commission of Kansas.* Supplement to Volume II, October 3, 1928, p. 13.

(*b*) State of Missouri, *Eightieth Report of the Public Schools.* "A Preliminary Report of the Survey of the Public Schools and Higher Institutions in the State of Missouri." Strayer, George D., and Engelhardt, N. L., Directors of the Survey, pp. 150-151.

(*c*) Nebraska State Teachers Association, *Research Bulletin No. 3,* "A Plan for Providing Equality of Educational Opportunity in Nebraska," November, 1928, p. 15.

(*d*) Mort, Paul R. *Equalizing Educational Opportunity in Ohio.* Prepared for the Ohio School Survey Commission, November 1, 1932, p. 38.

TABLE XVIII.—Enrollment of pupils in Kansas elementary schools employing different numbers of teachers(*a*)

SIZE OF SCHOOLS.	Number of schools.	Enrollment.		
		First quartile.	Median.	Third quartile.
2-Teacher..............................	54	35	42	49
3-Teacher..............................	77	40	60	66
4-Teacher..............................	143	103	118	130
5-Teacher..............................	52	87	109	126
6-Teacher..............................	26	104	137	176
7-Teacher..............................	17	141	149	165
8-Teacher..............................	34	162	180	221
9-Teacher..............................	18	189	211	248
10-Teacher..............................	8	204	250	304
11-Teacher..............................	4	276	295	321
12-Teacher..............................	3	252	376	304
13-Teacher..............................	3	318	324	362
14-Teacher..............................	None	....	....	....
15-Teacher..............................	1	....	452	....
16-Teacher..............................	1	....	422	....

(*a*) *Kansas Educational Directory* 1930-1931, Issued by the State Superintendent of Public Instruction, pp. 18-40.

Another indication of present practice as it relates to the number of pupils assigned to a room in which two grades are taught by the same teacher may be obtained by learning what numbers of children are now taught by teachers in Kansas graded schools in cities which assign two grades to a teacher. In

TABLE XIX.—Average daily attendance of pupils in Nebraska elementary schools employing different numbers of teachers (*a*)

NUMBER OF TEACHERS EMPLOYED.	Number of schools.	Average daily attendance. First quartile.	Median.	Third quartile.
2 Teachers	9	42	45	49
3 Teachers	64	51	62	74
4 Teachers	118	78	91	104
5 Teachers	52	105	124	139
6 Teachers	23	138	155	182
7 Teachers	20	167	190	198
8 Teachers	26	162	182	205
9 Teachers	22	201	225	275
10 Teachers	15	224	247	327
11 Teachers	7	207	275	332

(*a*) Nebraska State Department of Public Instruction, Mimeographed Sheet, Table 2, "The Relation Between Average Daily Attendance and Number of Teachers in the Elementary Schools in 356 Nebraska Cities and Villages for the School Year 1930-1931."

order to obtain this information, a request was sent to the 88 superintendents of first and second class cities, requesting them to indicate whether two grades were assigned to a teacher during the school year 1931-1932, and if so what the average number was for a combination of grades 1 and 2, 3 and 4, 5 and 6, and 7 and 8. Fifty-one replies were received in which 24 superintendents stated that such groupings of grades were not made, and 27 stated that two grades were assigned to one teacher in one or more instances. In twenty cities grades 1 and 2 were grouped together with a median enrollment of 31.5 pupils, a first quartile number of 29, and a third quartile number of 36. In nineteen cities grades 3 and 4 were grouped together with a median enrollment of 35. Grades 5 and 6 were assigned to the same teacher in seventeen school systems in which the median enrollment was 34. In only five cities were grades 7 and 8 assigned to the same room. The range was from 29 to 40 pupils, with a median enrollment of 40 pupils.

None of these methods reviewed for determining the optimum maximum standard enrollment in elementary classrooms accommodating more than one grade has been based upon the major consideration of the proper number of pupils to permit satisfactory educational results, but rather upon present practice uncritically determined so far as proper conditions for learning and teaching are concerned. Therefore, a more justifiable and defensible method of determining the enrollment is yet to be discovered. In lieu of a better practical procedure the judgment of responsible educational administrators who are acquainted with Kansas conditions was secured. It seems logical to believe that educational officers, upon whom would in a large measure devolve the duty of deciding this question if Coöperative School Areas were to be organized, and whose training and experience have familiarized them with the conditioning factors, should constitute a body of able and relatively competent jurors to pass upon the matter. Upon this assumption the county superintendents of public instruction and superintendents of graded school systems of Kansas were chosen as the jurors.

A blank, a copy of which appears on pages 117-118 of the Appendix, was prepared for their use. The blank consists of three parts: a set of directions, provision for recording the juror's judgment of the proper number of children to be assigned several different grade groupings, and a series of questions relating to the juror's educational experience and training. The jurors were asked, "In your judgment what is the *maximum* number of pupils who should be assigned to a teacher if she has the number of grades in her room indicated below, A, B, C, D, etc.? Please draw a circle around the proper number in each column. By maximum is meant the largest number of pupils who can be taught satisfactorily." The jurors were requested, in determining their replies, to take into consideration: "1. The present Kansas State Course of Study. 2. The ability of Kansas to support education. 3. The well being of the pupils. 4. The well being of the teachers." Provisions for expressing their judgments presented the following grade groupings: Grade 1 and 2, 3 and 4, 5 and 6, and 7 and 8; grades 1, 2, and 3; grades 4, 5, and 6; grades 1, 2, 3 and 4; grades 5, 6, 7 and 8; and grades 1 to 8 respectively. The questions relating to experience and training had as their objective the securing of information related to the total number of years spent in educational work in rural school work as teacher, principal or superintendent, and county superintendent; and in graded school work as teacher, principal or superintendent. In regard to training the jurors were requested to state what degrees they held and when received, or, if they did not hold degrees, what number of college hours they had completed in an institution of higher learning.

Replies were received from 53 of the county superintendents and from 31 superintendents of graded school systems. Only 46 replies from county superintendents were usable; all those from the superintendents of graded school systems were complete enough to be used in full or in part. Table XX supplies information concerning the county superintendents.

TABLE XX.—Experience of forty-five Kansas county superintendents who served as jurors

Number of years of experience.	Jurors having total number of years of experience given.	Number of jurors having given number of years of experience.					
		As rural teacher.	As rural principal or superintendent.	As county superintendent.	As grade teacher.	As grade school principal.	As grade school superintendent.
None	....	2	33	....	15	23	39
1-2	....	13	4	12	7	2	3
3-4	....	11	1	8	5	7	....
5-6	1	2	3	8	4	7	1
7-8	4	6	1	8	4	3	....
9-10	5	4	2	6	6	2	1
11-12	....	4	....	1	1	....	....
13-14	2	3	....	1	....	1	1
15-16	6	....	1	1	1	....	....
Over 16	27	....	....	....	2	....	....
First quartile	13.25	2	....	2	....	....	....
Median	18.0	4	....	5	2.5	....	....
Third quartile	22.75	8.75	....	8	8	5	....

A summarization of the experience and training of these 45 county superintendents shows that the median one has spent a total of 18 years in educational work, has taught in a rural school for four years, has not served as principal or superintendent, has filled the office of county superintendent for five years, has taught in a graded school for 2.5 years, and has completed 65 hours of college work.

Table XXI gives the educational experience of the 31 superintendents of graded school systems who acted as jurors.

TABLE XXI.—Experience of thirty-one superintendents of graded school systems of Kansas who served as jurors

Number of years of experience.	Jurors having total number of years of experience given.	Number jurors having given number of years of experience.				
		As rural teacher.	As rural principal or superintendent.	As grade teacher.	As grade school principal.	As grade school superintendent.
None		12	25	16	20	
1-2		13	1	10	5	2
3-4		4	1	3	3	4
5-6	1		2	1	2	2
7-8	1	2		1	1	4
9-10	2		1			1
11-12	4					3
13-14	3		1			3
15-16	3					4
Over 16	17					8
First quartile	12					15.75
Median	18	1				12.0
Third quartile	25	2	0	2	2	19.0

Every city superintendent who served as a juror holds at least a bachelor's degree. The median one has a master's degree. The median superintendent had under his supervision 16 elementary teachers. The first quartile number was 5.75 teachers and the third quartile number was 26. The median city superintendent may be characterized as a man who has been engaged in educational work for 18 years, who has taught in a rural school one year, who has served for 12 years as a city superintendent, who holds a master's degree, and who is in charge of a school system in which 16 elementary teachers are employed.

The experience of all the jurors, county superintendents, and superintendents of graded school systems, is exhibited in Table XXII.

This table shows that for all the jurors considered as one group, the median juror has been engaged in educational work for 18 years; he has taught in rural schools for two years, and has served as a county or city superintendent of schools for 5.9 years. As further preparation for serving as a juror the median member of the group holds a bachelor's degree from a college or university. All the jurors have had opportunity to become acquainted with the factors which enter into the determination of the proper number of pupils to be assigned to a teacher in small graded schools in Kansas. They, moreover, represent many parts of the state in their places of residence. Their homes are in 61 of the 105 counties of the state. Forty-three of the 64 counties included in this study are represented by one or more jurors.

The judgments of the jurors have been assembled in Table XXIII.

TABLE XXII.—Experience of seventy-six Kansas county superintendents and superintendents of graded school systems of Kansas who served as jurors

Number of years of experience.	Jurors having total number of years of experience given.	Number of jurors having given number of years of experience.					
		As rural teacher.	As rural principal or superintendent.	As county superintendent.	As grade teacher.	As grade school principal.	As grade school superintendent.
None	....	14	58	31	31	43	39
1-2	....	26	5	12	17	7	5
3-4	....	15	2	8	8	10	4
5-6	2	2	5	8	5	9	3
7-8	5	8	1	8	5	4	4
9-10	7	4	3	6	6	2	2
11-12	4	4	....	1	1	....	3
13-14	5	3	1	1	....	1	4
15-16	9	....	1	1	1	....	4
Over 16	44	....	....	....	2	....	8
First quartile	12.9	1	....	....	....	....	....
Median	18.0	2	....	1.67	1.67	....	....
Third quartile	23.84	7	....	6	4.9	3.9	11.5

TABLE XXIII.—Maximum enrollment recommended per teacher with different grade groupings by the county and city school superintendents who served as jurors

ENROLLMENT RECOMMENDED BY JURORS AND STANDARD ERROR OF THE MEDIAN.	Enrollment recommended for different grade groupings.							
	1-2	3-4	5-6	7-8	1-2-3	4-5-6	1-2-3-4	5-6-7-8
Median Juror's Recommendation:								
County superintendents	30	30	30	30	25	27	24	25
City superintendents	30	30	30	34	29	28	25	25
County and city superintendents	30	30	30	30	25	27	25	25
Standard Error of Median:								
County and city superintendents	.64	.72	.62	.64	.64	.68	.66	.65
First Quartile Juror's Recommendation:								
County superintendents	24	25	28	26	22	24	20	22
City superintendents	24	26	28	30	21	25	20	24
County and city superintendents	24	28	28	30	22	24	20	24
Third Quartile Juror's Recommendation:								
County superintendents	30	32	34	36	28.5	30	28	30
City superintendents	30	34	36	36	30	30	30	30
County and city superintendents	30	34	35	36	30	30	30	30

	1-2-3-4-5-6-7-8	1	2	3	4	5	6	7	8
Median Juror's Recommendation:									
County superintendents	28	30	31	30	30	30	30	30	32
City superintendents	24	30	32	34	35	35	36	36	38
County and city superintendents	24	30	30	30	35	35	35	35	35
Standard Error of Median:									
County and city superintendents	.65	.79	.85	.76	.87	.82	.81	.49	.85
First Quartile Juror's Recommendation:									
County superintendents	20	24	25	26	26	27	28	28	28
City superintendents	20	30	30	30	30	30	30	30	30
County and city superintendents	20	25	25	26	26	28	30	30	30
Third Quartile Juror's Recommendation:									
County superintendents	25	30	35	34.5	35	35	36	36	38
City superintendents	28	35	35	40	40	40	40	40	40
County and city superintendents	28	35	35	35	35	38	39	39	40

The validity of the judgment of 76 jurors chosen from a much larger number of possible jurors may be open to question. The element of bias is likely to be present in any sampling. In the choice of these jurors some unknown elements of selection may have been operative which the investigator did not or could not control. There are certain pertinent facts which may throw light upon the degree of bias which may or may not have operated in the selection of jurors. The jurors' blanks were sent to every county superintendent in the state. Forty-five usable reports were received. These were prepared by individuals possessing a wide range of qualifications. Some had little or no experience in rural-school teaching, others had as much as thirteen years; the range of experience as county superintendent was from one to sixteen years; some had had no college training, others held master's degrees; and they resided in many parts of the state. The blanks were also sent to 66 superintendents of schools in communities employing from two to sixty teachers. By reference to Table XXI it is seen that the thirty-one who returned replies represent a diverse group in training, experience, and location.

A second question as to the validity of the judgments of the jurors may be related to their limited number, 76. Statistical theory makes available a method of determining the probable judgment of other juries chosen in the same manner from the same general population. The standard error of the median supplies evidence as to what the judgment of other juries selected in the same manner from the same type of population would very probably be. The standard error of the median for each grade grouping was determined. For the grade grouping including grades 1 and 2 it is .64. In other words, since the median enrollment determined by this jury for a combination of grades 1 and 2 was 30 pupils, there would be 68 chances out of a hundred that the median enrollment determined upon by another set of jurors chosen from the same population would be 30 plus or minus .64, or it would be between 29.36 pupils and 30.64 pupils. The medians and corresponding standard errors of the medians for each of the other grade groupings is to be interpreted in the same manner.

These judgments of the jurors were employed in determining the maximum number of pupils who should be assigned to each room in the development of the coöperative school of the proposed Coöperative School Area. Since the grade schools which would be made the centers of these areas vary in size from two-teacher schools to as many as at least sixteen-teacher schools, it was necessary to determine the maximum enrollment for each type of school. Before this could be done, it was essential to know what percentage of the total enrollment now in small graded and one-teacher schools combined would probably be enrolled in each grade.

The percentage of the combined enrollments in one-teacher and small graded schools for the school year 1928-1929 for grades 1 to 8 respectively was 14.38 per cent, 12.20 per cent, 12.94 per cent, 12.74 per cent, 12.22 per cent, 11.91 per cent, 12.31 per cent, and 11.25 per cent.[3] Because the percentages for 1928-1929 and for 1929-1930 are so very nearly the same and because 1929-1930 is nearer in point of time to 1930-1931, the percentages for 1929-1930 have been employed as the bases for calculation. Table XXIV shows the percentages for different grade groupings.

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[3] Twenty-seventh Biennial Report, State Superintendent of Public Instruction of Kansas, 1929-1930, pp. 399 and 403.

TABLE XXIV.—Percentage of total enrollment for 1929-1930 contained in different grade groupings for small graded and one-teacher Kansas schools

GRADE GROUPINGS.	Percentages.
Grades 1 and 2	26.58
Grades 3 and 4	25.68
Grades 5 and 6	24.13
Grades 7 and 8	23.56
Grades 1, 2 and 3	39.53
Grades 4, 5 and 6	36.67
Grades 1, 2, 3 and 4	52.27
Grades 5, 6, 7 and 8	47.69

The maximum number of pupils to be assigned to a school employing the different numbers of teachers who would be employed in the graded schools which would be included in the Coöperative School Areas was determined, first, by grouping the grades for each type of school; second, by dividing the decimal fraction representing the percentage of the total enrollment as found in the preceding paragraph and in Table XXIV for the group which had the largest percentage, into the third quartile number of pupils whom the jurors assigned to that grouping.

The quotient obtained in this manner represents the maximum enrollment for the given school. In a few instances different grade groupings were organized from any passed upon by the jurors. Each of these exceptional groupings will be discussed later when detailed reference will be made to them. This procedure may be clarified by the use of a formula and its application in a concrete case. The formula is:

$\frac{Q_3}{A}$ = maximum enrollment in a school with a given number of teachers having given grade groupings.

Q_3 = Third quartile number of pupils assigned by the jury to a room with a given grade grouping. This is for the grouping that contains the largest proportion of the entire enrollment.

A = sum of the decimal fractions representing the fractional part each grade included in the grouping bears to the total enrollment. This is for the grouping which contains a larger proportion of the entire enrollment than any other.

Application: Let the school be a three-teacher school in which one teacher's assignment is grades 1, 2, and 3; a second teacher's assignment is grades 4, 5, and 6; and a third teacher's assignment is grades 7 and 8.

Since grades 1, 2, and 3 contain a larger proportion of the total enrollment than any other grouping, Q_3 will be the number assigned by the jurors as the third quartile number of pupils where grades 1, 2, and 3 are grouped in one room. This is found to be 30, by reference to Table XXIII. By reference to

TABLE XXV.—Recommended maximum enrollment of schools employing different numbers of teachers

SIZE OF SCHOOL.	Grade grouping and calculation.	Maximum enrollment determined on basis of:	
		Median juror.[1]	Third quartile juror.[1]
1-Teacher.........	1 to 8, inclusive................................	24	28
2-Teacher.........	First teacher 1-2-3-4. .523 of total enrollment. Second teacher 6-7-8. Calculation: 30 ÷ .532 = 57	48	57
3-Teacher.........	First teacher 1-2-3. .395 of total enrollment. Second teacher 4-5-6. Third teacher 7-8. Calculation: 30 ÷ .395 = 76	63	76
4-Teacher.........	First teacher 1-2. .266 of total enrollment. Second teacher 3-4. Third teacher 5-6. Fourth teacher 7-8. Calculation: 30 ÷ .266 = 113	113	113
5-Teacher.........	First teacher 1 and ½ of grade 2. .235 of total enrollment. Second teacher 3 and ½ of grade 2. Third teacher 4 and ½ of grade 5. Fourth teacher 6 and ½ of grade 5. Fifth teacher 7-8. Circulation: 30 ÷ .235 = 153	127	153
6-Teacher.........	First teacher 1. .193 of total enrollment. Second teacher 2. Third teacher 3 and ½ of grade 4. Fourth teacher 5 and ½ of grade 4. Fifth teacher 6 and ½ of grade 7. Sixth teacher 8 and ½ of grade 7. Calculation: 30 ÷ .193 = 177	155	177
7-Teacher.........	First teacher 1. .152 of total enrollment. Second teacher 2. Third teacher 3 and 1/5 of grade 4. Fourth teacher 4/5 of grade 4 and 2/5 of grade 5. Fifth teacher 3/5 of grade 5 and 3/5 of grade 6. Sixth teacher 2/5 of grade 6 and 4/5 of grade 7. Seventh teacher 1/5 of grade 7 and grade 8. Calculation: 34 ÷ .152 = 219	194	219
8-Teacher.........	First teacher 1. .144 of total enrollment. Second teacher 2. Third teacher 3. Fourth teacher 4. Fifth teacher 5. Sixth teacher 6. Seventh teacher 7. Eighth teacher 8. Calculation: 35 ÷ .144 = 243	209	243

TABLE XXV.—CONCLUDED

SIZE OF SCHOOL.	Grade grouping and calculation.		Maximum enrollment determined on basis of:	
			Median juror.[1]	Third quartile juror.[1]
9-Teacher.........	8-teacher school. 1-teacher school.	243 pupils. 28 pupils.	233	271
10-Teacher.........	8-teacher school. 2-teacher school.	243 pupils. 57 pupils.	247	300
11-Teacher.........	8-teacher school. 3-teacher school.	243 pupils. 76 pupils.	272	319
12-Teacher.........	8-teacher school 4-teacher school.	243 pupils. 113 pupils.	222	356
13-Teacher.........	8-teacher school. 5-teacher school.	243 pupils. 153 pupils.	336	396
14-Teacher.........	8-teacher school. 6-teacher school.	243 pupils. 177 pupils.	364	420
15-Teacher.........	8-teacher school. 7-teacher school.	243 pupils. 219 pupils.	403	462
16-Teacher.........	8-teacher school. 8-teacher school.	243 pupils. 243 pupils.	418	486

[1] Calculated on basis of the number of pupils assigned to the grade grouping which represents a larger percentage of the total than any other grouping by the median and third quartile judges respectively.

Table XXIV, grades 1, 2, and 3 are found to contain probably .395 of the total enrollment of any given school.

Hence, by substitution for $\frac{Q_3}{A}$, the result becomes $\frac{30}{.395} = 76.$

Grades 4, 5, and 6 contain .366 of the total enrollment, and 30 pupils may be assigned to a room accommodating these grades. Since .366 of 76 pupils is fewer than 30 pupils, and .235 (the proportion of the total enrollment found in grades 7 and 8) of 76 is fewer than 36, the maximum enrollment assigned to these rooms by the jury, 76, becomes the maximum enrollment for a three-teacher school. Table XXV shows the method of determining the total maximum enrollment of pupils in schools employing two to sixteen teachers.

The table is to be read thus: A one-teacher school includes grades 1 to 8 inclusive. The judgment of the median juror was that the maximum enrollment should be 24. The juror at the third quartile position gave 28 as the maximum number. A two-teacher school includes grade groupings of 1, 2, 3, and 4 under one teacher and grades 5, 6, 7, and 8 under a second teacher. The maximum enrollment as determined by jurors at the median and third quartile positions is 48 and 57 pupils respectively. These numbers were obtained by dividing 25 by .523 and 30 by .523. The 25 represents the maximum number of children whom the median juror would assign to a teacher with grades 1, 2, 3, and 4. The number .523 represents the proportion of the entire enrollment that was found in grades 1, 2, 3, and 4 during the school year 1929-1930. The number 30 represents the number of children whom the juror at the third quartile position would assign to a teacher with grades 1, 2, 3, and 4. Into it .523 is divided to determine the maximum number of children who should be enrolled in a two-teacher school on the basis of the judgment of the juror at the third quartile position. The remainder of the table is to be read in the same manner. The maximum enrollment for schools employing more than sixteen teachers is to be determined by combining in the same manner.

A part of grade 2 and grade 3 are grouped in one room, and grade 4 and a part of grade 5 in the tabulation for a five-teacher school even though the jurors did not express a judgment as to what the maximum enrollment should be with these groupings. The groupings seem reasonable, however, because the first grouping contains .190 of the total enrollment and the second .1885 of the total. When .190 of 127 and 153 is determined, the results are 24 and 29 respectively, and when .188 is taken of 127 and of 153 the results are 24 and 29 respectively. Now the jurors did express the judgment that 25 to 30 pupils might be grouped in grades 1, 2, and 3, and 27 to 30 pupils in grades 4, 5 and 6. Hence, it is logical to assign fewer children to grades 2 and 3 and to grades 4 and 5 respectively than to the larger groupings even though the jurors did not pass on these groupings specifically.

In the case of a six-teacher school, grade 6 and half of grade 7 are grouped together even though the jurors did not consider this grouping. It is not unreasonable, however, because the jurors at the median and third quartile positions did express the opinion that 24 and 30 pupils respectively might be assigned to a grouping consisting of grades 5, 6, 7, and 8. In the grouping for a six-teacher school the group consisting of grades 6 and half of 7 would have an enrollment of 28 to 32, which numbers exceed the permitted numbers for such grouping, consisting of grades 5, 6, 7, and 8, by a very limited degree. By a similar line of argument for a seven-teacher school, the grouping of four-fifths of grade 4 and two-fifths of grade 5 in one group, and two-fifths of grade 6 and four-fifths of grade 7 in another group is justified. As given in the table, the first grouping would have an enrollment of 29 and 33 for median and third quartile numbers. The corresponding numbers in the judgment of the jurors where grades 4, 5, and 6 were grouped were 27 and 30. In the grouping of two-fifths of grade 6 and four-fifths of grade 7, the table would yield an enrollment of 28 and 32 at the median and third quartile positions respectively. In the jurors' judgment, if grades 5, 6, 7, and 8 are grouped, the maximum enrollment might be 25 to 30.

This method of computation gives an assignment to only one teacher in a school as great as that approved by the jurors at the third quartile position. In many other groupings the numbers assigned to the other rooms are not greater than the number assigned by the median juror. Table XXVI gives the comparison for each type of school.

This table is to be read thus: In a three-teacher school the enrollment for the combination of grades 1, 2, and 3 would exceed that approved by the median

TABLE XXVI.—Enrollment for each room as determined by median juror and method of computation employed in this study.

TYPE OF SCHOOL.	Grade grouping.	Enrollment as determined by—		Variation from number assigned by median juror.
		Median juror.	Computation employed in this study.	
1-Teacher	1-2-3-4-5-6-7-8	24	28	+4
2-Teacher	1-2-3-4	25	30	+5
	5-6-7-8	23	27	+4
3-Teacher	1-2-3	25	30	+5
	4-5-6	27	28	+1
	7-8	30	18	—12
4-Teacher	1-2	30	30	0
	3-4	30	29	—1
	5-6	30	27	—3
	7-8	30	27	—3
5-Teacher	1 and ½ of 2	30	31	+1
	3 and ½ of 2	30	29	—1
	4 and ½ of 5	30	29	—1
	6 and ½ of 5	30	28	—2
	7-8	30	36	+6
6-Teacher	1	30	25	—5
	2	30	21	—9
	3 and ½ of 4	30	34	+4
	5 and ½ of 4	30	33	+3
	6 and ½ of 7	30	32	+2
	8 and ½ of 7	30	31	+1
7-Teacher	1	30	31	+1
	2	30	27	—3
	3 and 1/5 of 4	30	34	+4
	4/5 of 4 and 2/5 of 5	30	33	+3
	3/5 of 5 and 3/5 of 6	30	32	+2
	2/5 of 6 and 4/5 of 7	30	32	+2
	8 and 1/5 of 7	30	30	same
8-Teacher	1	30	35	+5
	2	30	30	0
	3	30	31	+1
	4	30	31	+1
	5	35	30	—5
	6	35	29	—6
	7	35	30	—5
	8	35	27	—8

juror by 5; in the grouping of grades 4, 5, and 6 by 1; and in the grouping of grades 7 and 8 the enrollment would be 12 fewer than that approved by the median juror. It is to be noted that in the grouping of grades 1, 2, and 3 the enrollment of 30 is that approved by the juror of the third quartile position.

For schools with more than eight teachers the comparison is determined by combining the data for each of the two types of schools from which its enrollment has been determined. For example, in the case of a twelve-teacher school, which in this study is regarded as consisting of an eight- and a four-teacher school combined, it is found that in the four-teacher school the enrollment in no room exceeds that approved by the median juror and in only three cases in the eight-teacher school do the assigned enrollments exceed this median number. Hence, for a twelve-teacher school in nine rooms the enrollment would not exceed that approved by the median juror.

When the average number of pupils per teacher for schools employing different numbers of teachers is determined, it is found that it would be for schools employing

One teacher	28 pupils	Nine teachers	30.1 pupils
Two teachers	28.5 pupils	Ten teachers	30.0 pupils
Three teachers	25.3 pupils	Eleven teachers	29.0 pupils
Four teachers	28.25 pupils	Twelve teachers	29.6 pupils
Five teachers	30.6 pupils	Thirteen teachers	30.4 pupils
Six teachers	29.5 pupils	Fourteen teachers	30.0 pupils
Seven teachers	31.3 pupils	Fifteen teachers	30.8 pupils
Eight teachers	30.4 pupils	Sixteen teachers	30.4 pupils

With such a close agreement on the per-teacher enrollment among the jurors when each acted independently of all others, it is reasonable to believe that an average of 28 pupils per teacher might be regarded as the number which could be assigned to schools employing one to four teachers inclusive and an average of 30 pupils per teacher to schools employing more than four teachers. By following this procedure, the enrollments would be for schools employing

One teacher	28 pupils	Nine teachers	270 pupils
Two teachers	56 pupils	Ten teachers	300 pupils
Three teachers	84 pupils	Eleven teachers	330 pupils
Four teachers	112 pupils	Twelve teachers	360 pupils
Five teachers	150 pupils	Thirteen teachers	390 pupils
Six teachers	180 pupils	Fourteen teachers	420 pupils
Seven teachers	210 pupils	Fifteen teachers	450 pupils
Eight teachers	240 pupils	Sixteen teachers	480 pupils

How nearly the enrollments of the respective schools, as determined by a strict application of the jurors' judgments and as determined by adjustment of these enrollments as just shown, are similar is exhibited in Table XXVII.

TABLE XXVII.—Enrollments as determined by strict application of the jurors' judgments and by adjusting the enrollments thus determined.

TYPE OF SCHOOL.	Enrollment as determined by:	
	Strict application of jurors' judgments.	Enrollments derived from strict application of jurors' judgments.
One-teacher	28	28
Two-teacher	57	56
Three-teacher	76	84
Four-teacher	113	112
Five-teacher	153	150
Six-teacher	177	180
Seven-teacher	219	210
Eight-teacher	243	240
Nine-teacher	271	270
Ten-teacher	300	300
Eleven-teacher	319	330
Twelve-teacher	356	360
Thirteen-teacher	396	390
Fourteen-teacher	420	420
Fifteen-teacher	462	450
Sixteen-teacher	486	480

For the purposes of this study these adjusted enrollments will be employed as maximum enrollments for the respective schools. It is to be clearly understood, however, that in specific situations the enrollment for a given school might be greater or less and still be fully consistent with the method used in arriving at these enrollments. The variations would be dependent upon the percentage distribution of the pupils of each of the eight grades. As an example it is altogether conceivable that in a given school the percentages of the total enrollment found in the various groupings might be 22.2, 25.2, 26, and 26.6 per cent for groups composed of grades 1 and 2, 3 and 4, 5 and 6, and 7 and 8 respectively, instead of the percentages found in Table XXIV. In this case the enrollments for the respective groupings would be 30, 34, 35, and 36 pupils, and yet not exceed the enrollment in any grouping approved by the jurors, as can be discovered by reference to Table XXIII. In this case the maximum enrollment for the school would be 135 pupils instead of 112, which would be the number if the percentage distribution for each grouping were the same as for the state as a whole. Other valid reasons for increasing enrollments above those proposed will occur to the practical school administrator. Exceptionally competent teachers would justify greater enrollments, as would superior and expert supervision.

In order to secure the judgments of the directors of teacher-training work in Kansas colleges relative to the maximum enrollment for schools employing different numbers of teachers, a letter containing the following question was mailed to them.

"In your judgment should the *maximum* enrollment for an elementary school, including Grades I to VIII inclusive, be greater than, less than, or the same as—

57 pupils for a 2-teacher school?——— What should it be?———
76 pupils for a 3-teacher school?——— What should it be?———
113 pupils for a 4-teacher school?——— What should it be?———
153 pupils for a 5-teacher school?——— What should it be?———
177 pupils for a 6-teacher school?——— What should it be?———
219 pupils for a 7-teacher school?——— What should it be?———
243 pupils for a 8-teacher school?——— What should it be?———
271 pupils for a 9-teacher school?——— What should it be?———
300 pupils for a 10-teacher school?——— What should it be?———
319 pupils for a 11-teacher school?——— What should it be?———
356 pupils for a 12-teacher school?——— What should it be?———
396 pupils for a 13-teacher school?——— What should it be?———
420 pupils for a 14-teacher school?——— What should it be?———
462 pupils for a 15-teacher school?——— What should it be?———
486 pupils for a 16-teacher school?——— What should it be?———

Nineteen replies were returned. The results show that in the opinions of these directors the maximum enrollments for schools employing different numbers of teachers should be as shown in Table XXVIII.

The same letter was mailed to the chief executive officer of the state departments of education of all the states, with the request that he have the best qualified officer in the department supply the information desired. While 26 replies were returned, only 9 were of such a nature that they could be used for the purposes of this study. They were prepared by the following officials: supervisor of rural education, elementary school agent, public school supervisor, director of rural education, supervisor of rural education, state superintendent, director of teacher training, assistant director of rural schools division, and agent for rural education.

An effort was also made to discover the recommendations and instructions of state departments of education and the requirements of state legislatures concerning the number of pupils who should be assigned to a teacher on the

TABLE XXVIII.—Median enrollments and third quartile enrollments in schools of various sizes, as determined by the directors of teacher-training in Kansas.

SIZE OF SCHOOL.	Enrollment as recommended by:	
	Median director.	Third quartile director.
2-teacher	55.5	60
3-teacher	76	90
4-teacher	113	120
5-teacher	153	153
6-teacher	177	180
7-teacher	219	217
8-teacher	243	280
9-teacher	271	305
10-teacher	300	355
11-teacher	330	406
12-teacher	260	455
13-teacher	396	454
14-teacher	420	517
15-teacher	462	572
16-teacher	486	640

basis of enrollment or average daily attendance as the case might be. Instances of this nature were reported by the state educational headquarters of Ohio, Virginia, Maryland, and Oregon.

Under date of April 22, 1932, the assistant director of the Ohio State Department of Education, Joseph W. Fichter, sent a circular letter, approved by B. O. Skinner, Director of Education, to boards of education and superintendents of schools, in which he stated:

"As the time for employing teachers is approaching, the following suggestions are offered to assist you in planning for the 1932-'33 year.

"Number of teachers to be employed

"2. In other than one-room schools, employ no more than one elementary teacher for each forty pupils or fraction thereof."

State Superintendent of Public Instruction, C. A. Howard, of Oregon, suggested that—

"Provisional standards for elementary schools might be set up as follows:

"One teacher .... 1 to 25 pupils A. D. A.
Two teachers ...... 1 to 30 pupils A. D. A.
Three teachers .... 1 to 30 or 35 pupils each in A. D. A."[4]

The State Board of Education of Virginia has fixed the "minimum standards of attendance for legal schools" thus:

"Schools of one room, average daily attendance of twenty (20). Schools of two rooms, average daily attendance of thirty-six (36). Schools of three rooms, average daily attendance of fifty (50). Schools of more than three rooms shall show an average daily attendance of not less than fourteen (14) for each added room."[5]

The Maryland legislature apparently believed that the maximum average daily attendance of pupils per teacher should not exceed 40, for in 1916 it enacted a law providing that—

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[4] Howard, C. A. *Efficiency in School Expenditures,* 1931. Issued by C. A. Howard, Superintendent of Public Instruction, Salem, Oregon.

[5] Supplement No. 1, Virginia School Laws, July, 1923, Volume VI, No. 1. Harris Hart, Superintendent of Public Instruction, Richmond, Virginia.

"1. Whenever a school numbers more than forty children in average attendance, an assistant may be employed by the county board of education, in their discretion; and for every additional forty, one teacher may be appointed."[6]

In reply to the question, "Does your state set a desirable, maximum enrollment for schools of different sizes?" seventeen state departments replied "No"; two replied "Yes"; one replied "Yes" for "state-aid districts"; and six which replied to other questions on the same inquiry blank gave no answer to this question.

Table XXIX presents in tabular form a comparison of the number of pupils to be assigned to schools employing different numbers of teachers as determined by the various methods and authorities presented in this chapter. Because several of the methods discussed employ average daily attendance as the basis of determination, the enrollments which the jurors would assign to schools of the various sizes for Kansas were converted to average daily attendance numbers to make comparisons possible.

The table is to be read thus: For a two-teacher school, the average daily attendance as derived from the jury's judgment is 48; the maximum enrollment as recommended by the jury is 57; the maximum enrollment as determined by adjusting the jury's judgment is 56; the maximum enrollment as determined by the directors of teacher training in Kansas colleges is 60; and by officials of state departments of public instruction, 60. The average daily attendance in Kansas small graded schools was 49. In the recommendations for equalization, the number of pupils in average daily attendance was 42 for the nation, 44 for Missouri, 54 for Ohio, 35 for Kansas, and 35 for Nebraska. The numbers of pupils to be assigned to an elementary teacher according to the recommendations or regulations of state departments of education was 40 in Ohio; and 36 as a minimum number in daily attendance in Virginia. The Maryland statutes prescribe that 40 pupils may be the maximum number in average attendance. While the numbers which the jurors would assign to the schools of varying sizes are slightly higher than those recommended by Dr. Mort for Kansas for one-teacher to nine-teacher schools inclusive, except for eight-teacher schools, for larger schools the application of the method employed as based on the jurors' judgment would yield smaller numbers. The numbers that would be assigned by the jurors are smaller than those found in actual practice. The jurors would assign smaller numbers in every size of school than the Ohio report recommends. The Missouri survey recommends higher numbers for every size of school except the two-teacher and the four-teacher ones. For the four-teacher school the jurors and the survey recommend the same number, 96. Dr. Mort, in *State Support for Public Schools,* likewise recommends higher numbers than the jurors except for two-teacher schools. The directors of teacher-training work in Kansas institutions of higher learning approve of higher enrollments than the jury in all sizes of schools except in the five- and seven-teacher schools, in which cases they agree on the enrollment. The officials of state boards of education approve of higher enrollments in all sizes of schools. The numbers of pupils in average daily attendance for the schools of different sizes recommended by the state departments of education for Ohio and Oregon, and permitted by the statutes of Maryland, are higher than the numbers approved by the jury. The minimum number of pupils in average daily attendance prescribed by the Virginia State

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[6] Maryland, Public School Laws, 1927. Section 76, p. 44.

TABLE XXIX—Average daily attendance and enrollment of schools of different sizes as determined by different methods

METHODS EMPLOYED.	Size of school.															
	1 Tchr.	2 Tchrs.	3 Tchrs.	4 Tchrs.	5 Tchrs.	6 Tchrs.	7 Tchrs.	8 Tchrs.	9 Tchrs.	10 Tchrs.	11 Tchrs.	12 Tchrs.	13 Tchrs.	14 Tchrs.	15 Tchrs.	16 Tchrs.
Judgment of jury (*a*)																
Computed A. D. A.	24	48	64	96	130	150	186	206	230	255	271	303	337	357	392	402
Enrollment	28	57	76	113	153	177	219	243	271	300	319	356	396	420	462	486
Enrollment (adjusted)	28	56	84	112	150	180	210	240	270	300	330	360	390	420	450	480
Directors of teacher training (*a*): Enrollment	......	60	90	120	153	180	219	280	305	355	406	455	454	517	572	640
Officials of state dept. of education (*b*)	......	60	80	120	160	205	250	280	315	350	387	425	472	507	542	577
Kansas small graded schools (*a*): A. D. A.	......	49	66	130	126	176	165	221	248	304	321	304	362	......	......	......
Recommended for equalization—A. D. A. "State Support for Education" (*c*)	21	42	73	104	135	166	197	228	259	290	319	348	377	406	......	......
Missouri	......	44	80	96	132	167	202	244	286	318	350	382	414	348	480	512
Ohio	......	54	60	110	145	180	215	247	277	307	337	367	397	427	......	......
Kansas	22	35	60	86	114	143	172	200	229	258	287	316	345	374	404	432
Nebraska	30	35	65	95	125	155	185	215	245	275	305	335	365	395	425	455
Recommendations or regulations of state departments of education:																
Ohio (*d*)	40	80	120	160	200	240	280	320	360	400	440	480	520	560	600	640
Oregon (*e*)	......	60	90	120	150	180	210	240	270	300	330	360	390	420	450	480
Virginia (*f*)	20	36	50	64	78	92	106	120	134	148	162	176	190	204	218	242
Maryland (*g*)	40	80	120	160	200	240	280	320	360	400	440	480	520	560	600	640

(*a*) Third quartile.

(*b*) Medians.

(*c*) Mort, Paul R. *State Support for Public Education.* The American Council on Education, Washington, D. C., p. 122.

(*d*) Not stated whether enrollment, average daily attendance, or some other unit of measure.

(*e*) Average daily attendance.

(*f*) Minimum average daily attendance.

(*g*) Maximum average daily attendance.

Board of Education is lower in all cases than the maximum numbers approved by the jury. What maximum enrollments the Virginia state department would approve are not known.

Summary

1. There is a number, it is assumed, beyond which the enrollment of a graded school should not be increased by the addition of pupils from one-teacher schools if the quality of instruction is not to be adversely affected.
2. No reports of research work performed to determine what the maximum enrollment in schools employing different numbers of teachers may be without causing a deterioration in instruction could be discovered.
3. Studies have been conducted to discover what is present practice in a number of states and in the nation at large. The findings of some of these studies have been employed in the formulation of financial equalization programs.
4. A study has been conducted by the writer to determine the judgments of a jury composed of superintendents of graded schools and county superintendents of Kansas concerning the maximum number of pupils who should be assigned to teachers caring for different grade groupings in schools employing different numbers of teachers.
5. It is proposed to use the judgment of this jury as the basis for determining the standards for enrollments in the coöperative schools of the proposed Coöperative School Areas.

CHAPTER VII

Summarization of the Techniques and Procedures Required for the Organization of Coöperative School Areas and Their Application to the Data for Sixty-four Counties.

Thus far this study has been largely concerned with the development of techniques and procedures for the organization of Coöperative School Areas. In this chapter these will be assembled and applied to the theoretical organization of Coöperative School Areas in sixty-four counties.

These procedures and techniques relate to:

1. The determination of the maximum enrollment for schools employing different numbers of teachers.
2. The development of a method for determining the strictly educational costs for coöperative schools.
3. The development of a method for determining transportation costs for coöperative schools.
4. The development of a method for dividing costs among the districts composing a Coöperative School Area.

In Chapter VI it was proposed to limit the enrollment of schools employing different numbers of teachers to these maximum numbers:

For a one-teacher school	28 pupils
For a two-teacher school	56 pupils
For a three-teacher school	84 pupils
For a four-teacher school	112 pupils
For a five-teacher school	150 pupils
For a six-teacher school	180 pupils
For a seven-teacher school	210 pupils
For an eight-teacher school	240 pupils
For a nine-teacher school	270 pupils
For a ten-teacher school	300 pupils
For an eleven-teacher school	330 pupils
For a twelve-teacher school	360 pupils
For a thirteen-teacher school	390 pupils
For a fourteen-teacher school	420 pupils
For a fifteen-teacher school	450 pupils
For a sixteen-teacher school	480 pupils

A method for determining costs was developed in Chapter V. There it was proposed that—

1. The strictly educational costs for a Coöperative School Area in which a small graded school would become the coöperative school and for which no additional classroom would be required would be the same as for the small graded school the year preceding the organization of the Coöperative School Area.
2. If an additional classroom should be required, it would be provided by utilizing a vacant room in the coöperative school building or by moving one of the small one-teacher school buildings to the site of the coöperative school, for which the cost is estimated at $150. The cost of conducting the work in the additional room would be determined by dividing the average salaries of the teachers of the small graded school by .70. The total cost of the coöperative school in such an area would be the sum of the cost of the small graded school for the preceding year, the cost of moving the small one-room school building, the cost of maintaining the additional room, and the cost of transportation.

3. If the schools of a city school system should become the coöperative schools, the cost to the one-teacher schools would be .80 of their cost for the preceding year. The city school board would receive this amount less the cost of transportation as determined by use of the technique developed in Chapter V. However, if a vacant room should be utilized to care for the pupils of the one-teacher schools, the one-teacher districts would bear the entire cost of maintaining this room. If this should be less than their expenditure for the preceding year, payment from this difference would be made to the city board of education by the application of the technique employed if no additional classrooms were required.

4. The following formulæ were developed for determining transportation costs:

If 6 pupils are to be transported: $(a \times 4 \times .05 - .75)\ d$

If 7 to 10 pupils are to be transported: $(a \times 4 \times .055 - .75)\ d$

If 11 or more pupils are to be transported: $(a \times 4 \times .10 - 1.00)\ d$

In these formulæ: a represents the distance in miles from any one-teacher school to the coöperative school; d represents the number of days during which the coöperative school would be in session.

5. In these Coöperative School Areas in which small graded schools become the coöperative schools, the cost of the coöperative school for each district included in the Coöperative School Area will be that proportion of the cost of the respective schools for the preceding year that the cost of the coöperative school should bear to the total cost of the districts comprising the Coöperative School Area for the preceding year.

These techniques and procedures will now be applied in the organization of Coöperative School Areas in the sixty-four counties included in the study. The full detailed calculation for organizing these areas in Atchison county will be presented. For the other counties the results only of the calculations will be given.

TABLE XXX—Significant facts relating to the Muscotah Coöperative School Area in Atchison county

(No additional teachers or rooms required)

SCHOOLS.	Number of teachers.	Length of term in months.	Total enroll-ment.	Current expense.	Average salary.	Average years' experience.	College hours.	Distance from coöp-erative school.	Cost of transpor-tation.	Reduc-tion in dollars.	Reduc-tion in per cent.
Muscotah	4	9	86	$7,388	$1,293	8	35	....	....	$878	12.97
No. 50	1	8	16	1,070	800	5	8	4.0	$468	124	12.9
No. 22	1	8	7	742	600	1	....	3.0	254	88	12.9
Coöperative school*	4	9	109	$8,110	$1,293	8	35	....	$722	$1,093	12.0

(* Not totals for respective columns.)

Calculation of Costs:

1. Transportation costs and strictly educational costs:
   $468 — for pupils from No. 50 (4.0 × 4 × .10 + 1.00) 180.
   254 — for pupils from No. 22 (3.0 × 4 × .055 + .75) 180.
   $722 — total cost for transportation.
   $7,388 — strictly educational costs.
   $8,110 — total cost for current expenses of the coöperative school.
2. Division of costs:

$$\left.\begin{array}{ll}\$8,110 & \text{(Cost of coöperative school}\\ \hline \$9,200 & \text{(Cost of separate schools}\end{array}\right\} = .88$$

Ratio of cost of coöperative school to the costs of the separate schools.

   1.00 — .88 = .12 reduction in costs.
   $878 = reduction for Muscotah (.12 × 7,388).
   $124 = reduction for No. 50 (.12 × 1,070).
   $88 = reduction for No. 22 (.12 × 742).
3. Advantages of the Coöperative School Area:
   (*a*) For Muscotah:...... (1) Financial saving of $878, or 12 per cent.
   (2) Socialization possible in larger group of pupils.
   (*b*) For Nos. 50 and 22: (1) Financial savings of $124 and $88 respectively, or 12 per cent.
   (2) Term nine months long rather than eight months.
   (3) Better paid, more experienced, better trained teachers.
   (4) Teachers have two grades each, rather than seven or eight.
   (5) Better socialization from larger groups.

TABLE XXXI—Significant facts relating to the Lancaster Coöperative School Area in Atchison County if an additional teacher were employed

SCHOOLS.	Number of teachers.	Length of term in months.	Total enrollment.	Current expense.	Average salary.	Average years' experience.	College hours.	Distance from coöperative school.	Cost of transportation.	Reduction in dollars.	Reduction in per cent.
Lancaster	2	8	51	$2,292	$780	....	64	....	....	....	....
No. 3	1	8	5	725	600	1	62	4.5	$264	....	....
No. 48	1	8	16	1,152	800	2	8.5	2.5	320	....	....
Coöperative school	3	8	72	$4,158	$780	....	64	....	....	$9.00	....

Calculation of Costs:

1. Transportation:
   $264 — for pupils from No. 3 (4.5 × 4 × .05 + .75) 160.
   320 — for pupils from No. 48 (2.5 × 4 × .10 + 1.00) 160.
   $584 — total for transportation.
2. Educational and plant costs:
   $1,114 — strictly current educational costs for additional room (780 ÷ .70).
   150 — cost of moving school building of No. 3 or No. 48 to Lancaster.
   2,292 — cost of Lancaster school before formation of Coöperative School Area.
   $3,556
3. Total costs: $584 — transportation costs.
   3,556 — strictly educational and plant costs.
   $4,140 — total costs.

Advantages of the Cooperative School Area:

1. Better socialization from larger groups.
2. With three teachers rather than two, as is the case in Lancaster, or one, as is the case in Nos. 3 and 48, teachers would have fewer grades and fewer classes. Hence, they would be able to give more individual attention to the pupils and to the enrichment of their work.

TABLE XXXII—Significant facts relating to the Atchison Coöperative School Area in Atchison County, a city school being the coöperative school

SCHOOLS.	Number of teachers.	Length of term in months.	Total enrollment.	Current expense.	Average salary.	Average years' experience.	College hours.	Distance from coöperative school.	Cost of transportation.	Reduction in dollars.	Reduction in per cent.
Atchison:											
No. 66	...	...	22	$1,280	...	...	...	1.5	$288	$256	20
No. 69	...	...	41	960	...	...	...	...	...	192	20
No. 25	...	...	13	1,040	...	...	...	4.5	504	208	20
No. U-5	...	...	41	1,500	...	...	...	1.5	288	300	20
No. 71	...	...	16	1,021	...	...	...	2.0	324	204	20
No. 7	...	...	27	960	...	...	...	3.5	432	192	20
No. 27	...	...	17	907	...	...	...	4.0	468	181	20
No. 4	...	...	30	1,080	...	...	...	1.5	288	216	20

Calculation of Costs:

1. Transportation costs are determined as in Table XXXI.
2. Full costs for the one-teacher school districts:

$1,024 for No. 66 (.80 × 1,280).
768 for No. 69 (.80 × 960).
832 for No. 25 (.80 × 1,040).
1,200 for No. U-5 (.80 × 1,500).
817 for No. 71 (.80 × 1,021).
768 for No. 7 (.80 × 960).
726 for No. 27 (.80 × 907).
864 for No. 4 (.80 × 1,080).

3. Amount paid to Atchison school board:

$736 from No. 66 (1,024 — 288).
768 from No. 69 (768 — 0).
328 from No. 25 (832 — 504).
912 from No. U-5 (1,200 — 288).
493 from No. 71 (817 — 324).
336 from No. 7 (768 — 432).
258 from No. 27 (726 — 468).
576 from No. 4 (864 — 288).

Total.................. $4,407

By the organization of this Coöperative School Area, Atchison could care for the pupils of eight one-teacher schools and still have an average enrollment of fewer than 38 pupils per teacher. Atchison would benefit by a financial gain of $4,407, and the one-teacher school districts would save a total of $1,749. In addition the pupils of the one-teacher districts would enjoy the advantages of a modern school system.

TABLE XXXIII—Significant facts relating to other Coöperative School Areas in Atchison County, with no additional teachers required

SCHOOLS.	Number of teachers.	Length of term in months.	Total enrollment.	Current expense.	Average salary.	Average years' experience.	College hours.	Distance from coöperative school.	Cost of transportation.	Reduction in dollars.	Reduction in per cent.
Lancaster	2	8	51	$2,292	$780	....	64	....	....	$344	15
No. 3	1	8	5	725	600	1	62	4.5	$264.00	109	15
Coöperative school	2	8	56	$2,556	$780	....	64	....	....	453	15
Farmington	2	8	44	$2,228	$820	6	37	....	....	....	16
No. 28	1	8	11	808	720	1	60	3.0	$352.00	....	18
Coöperative school	2	8	55	$2,539	$820	6	37	....	....	497	16
Arlington	2	8	34	$1,704	$720	....	....	....	....	....	....
No. 68	1	8	9	661	560	1	24	2.5	$208.00	....	....
No. 70	1	8	9	765	600	....	....	4.0	260.80	....	....
Coöperative school	2	8	52	$2,173	$720	....	....	....	....	957	36

Summarization for Atchison County

If the proposed Coöperative School Areas were organized, 14 one-teacher schools could be closed without the addition of a single additional classroom. This represents 22 per cent of the 64 one-teacher schools in the county. If one one-teacher building were moved, 15 one-teacher schools could be closed.

The total financial gain would be $9,156 if no additional classrooms were provided, and $8,712 if one additional room were maintained. However, the educational gain would be of much greater significance than the financial saving. Among other educational gains which are not so apparent is the increased time that the county superintendent would have available for supervision if the number of one-teacher schools were reduced by 22 per cent.

Table XXXIV gives a summarization of the pertinent data for the Coöperative School Areas which could be organized in fifty-nine of the sixty-four counties included in this study.

TABLE XXXIV—Significant facts relating to Coöperative School Areas which could be organized in the counties included in this study

COUNTY. (1)	Coöperative School Areas.			One-teacher schools included in Coöperative School Areas.		Number of one-teacher schools in county. (7)	Percentage of all one-teacher schools included in Coöperative Areas. (8)	Total reduction in cost. (9)
	Number of schools. (2)	Number of teachers. (3)	Total enrollment. (4)	Number of pupils. (5)	Number of schools. (6)			
Anderson:								
No additional rooms	5	13	321	104	10	81	12.3	$5,127
Additional rooms*	5	15	357	140	12	81	14.8	3,897
Atchison:								
No additional rooms	5	51	1,655	264	14	64	22.0	8,936
Additional rooms	5	52	1,671	280	15	64	23.4	8,879
Barton:								
No additional rooms	8	59	1,855	283	26	92	28.0	17,933
Additional rooms	9	62	1,942	319	29	92	31.5	17,577
Brown:								
No additional rooms	5	30	891	158	11	76	14.5	6,382
Additional rooms	5	32	971	238	15	76	20.0	6,807
Cherokee:								
No additional rooms	4	68	2,423	349	16	83	19.2	7,905
Clay:								
No additional rooms	7	15	391	49	7	93	7.5	2,935
Additional rooms	7	24	606	203	18	93	19.3	3,663
Cloud:								
No additional rooms	5	40	1,259	203	19	101	19	10,428
Additional rooms	5	41	1,286	230	21	101	21	12,817
Coffey:								
Additional rooms	5	16	444	132	11	94	11.7	4,434
Comanche	none	....	....	....	....	34	....	....

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* To be furnished by moving one-teacher school buildings to the sites of coöperative schools.

TABLE No. XXXIV—CONTINUED

COUNTY. (1)	Coöperative School Areas.			One-teacher schools included in Coöperative School Areas.		Number of one-teacher schools in county. (7)	Percentage of all one-teacher schools included in Coöperative Areas. (8)	Total reduction in cost. (9)
	Number of schools. (2)	Number of teachers. (3)	Total enrollment. (4)	Number of pupils. (5)	Number of schools. (6)			
Crawford:								
No additional rooms	3	23	694	106	8	89	9.0	$2,567
Decatur:								
No additional rooms	2	8	229	75	8	75	10.5	3,529
Doniphan:								
No additional rooms	5	25	711	88	8	54	14.8	4,484
Additional rooms	5	26	724	101	10	54	18.5	4,347
Douglas:								
No additional rooms	3	17	539	180	10	76	13.0	6,884
Edwards:								
No additional rooms	3	11	302	46	6	30	20.0	4,041
Elk:								
No additional rooms	2	12	355	114	8	73	10.9	2,375
Ford:								
No additional rooms	2	12	334	39	5	55	9.0	3,100
Additional rooms	3	16	431	55	7	55	12.7	3,251
Franklin:								
No additional rooms	4	5	309	68	5	73	6.8	1,424
Additional rooms	4	8	475	117	8	73	11.0	1,567
Geary:								
No additional rooms	2	5	73	32	3	38	8.0	2,375
Additional rooms	2	6	133	46	4	38	10.0	1,712
Gove:								
No additional rooms	1	5	132	22	1	42	2.4	603

TABLE No. XXXIV—CONTINUED

COUNTY.	Coöperative School Areas.			One-teacher schools included in Coöperative School Areas.		Number of one-teacher schools in county. (7)	Percentage of all one-teacher schools included in Coöperative Areas. (8)	Total reduction in cost. (9)
(1)	Number of schools. (2)	Number of teachers. (3)	Total enrollment. (4)	Number of pupils. (5)	Number of schools. (6)			
Gray	none					23		
Greenwood:								
No additional rooms	8	40	1,026	149	13	86	15.0	$9,674
Additional rooms	8	41	1,067	190	17	86	20.0	10,387
Harvey:								
No additional rooms	4	67	2,117	96	7	64	11.0	5,047
Additional rooms	5	72	2,263	138	10	64	15.6	5,069
Haskell:								
No additional rooms	1	5	148	10	1	21	5.0	492
Hodgeman	none					42		
Jackson:								
No additional rooms	8	22	613	183	18	89	20.0	5,862
Additional rooms	8	24	637	207	20	89	22.5	5,338
Jefferson:								
No additional rooms	5	26	759	153	12	81	22.0	2,282
Jewell:								
No additional rooms	7	26	679	185	20	145	13.8	8,289
Johnson:								
No additional rooms	5	25	579	165	14	76	18.4	5,159
Additional rooms	6	30	720	191	17	76	22.0	5,401
Kearny	none					19		
Kingman:								
No additional rooms	6	26	924	155	14	80	17.5	9,401
Additional rooms	8	36	1,063	237	24	80	30.0	9,904

TABLE No. XXXIV—CONTINUED

COUNTY. (1)	Coöperative School Areas.			One-teacher schools included in Coöperative School Areas.		Number of one-teacher schools in county. (7)	Percentage of all one-teacher schools included in Coöperative Areas. (8)	Total reduction in cost. (9)
	Number of schools. (2)	Number of teachers. (3)	Total enrollment. (4)	Number of pupils. (5)	Number of schools. (6)			
Kiowa:								
No additional rooms	2	16	424	87	6	46	13.0	$4,378
Labette:								
No additional rooms	2	6	153	29	2	96	2.0	1,003
Leavenworth:								
No additional rooms	5	70	2,149	217	12	60	20.0	6,705
Marshall:								
No additional rooms	9	31	768	143	18	125	14.0	8,630
Additional rooms	10	40	1,060	312	33	125	26.0	9,344
Mitchell:								
No additional rooms	6	20	701	50	8	100	8.0	3,568
Additional rooms	6	34	1,146	191	20	100	20.0	4,049
Morton:								
No additional rooms	1	11	304	31	1	12	8.3	793
McPherson:								
No additional rooms	7	54	1,843	316	22	104	21.0	12,591
Neosho:								
No additional rooms	8	22	571	105	9	87	10.0	5,150
Additional rooms	8	31	870	224	20	87	22.0	4,801
Ness:								
No additional rooms	6	22	581	98	12	65	18.0	7,262
Additional rooms	6	28	743	138	16	65	24.6	7,146
Norton:								
No additional rooms	2	15	389	80	8	107	8.0	3,560

TABLE No. XXXIV—CONTINUED

COUNTY. (1)	Coöperative School Areas.			One-teacher schools included in Coöperative School Areas.		Number of one-teacher schools in county. (7)	Percentage of all one-teacher schools included in Coöperative Areas. (8)	Total reduction in cost. (9)
	Number of schools. (2)	Number of teachers. (3)	Total enrollment. (4)	Number of pupils. (5)	Number of schools. (6)			
Osage:								
No additional rooms	8	29	769	168	16	92	17.0	$8,032
Additional rooms	8	33	855	259	22	92	24.0	8,032
Osborne:								
No additional rooms	5	25	872	138	14	99	14.0	7,262
Pawnee:								
No additional rooms	5	12	247	69	7	44	16.0	4,202
Phillips:								
No additional rooms	8	28	814	118	15	103	14.0	5,068
Additional rooms	8	33	943	247	25	103	24.0	3,152
Pottawatomie:								
No additional rooms	9	30	767	156	18	95	19.0	9,318
Additional rooms	9	33	949	338	31	95	33.0	7,701
Pratt:								
No additional rooms	3	12	311	41	4	40	10.0	3,378
Additional rooms	3	13	319	49	5	40	12.5	2,343
Rawlins	none	....	....	....	....	82	....	....
Reno:								
No additional rooms	7	27	687	171	14	118	12.0	8,256
Additional rooms	7	29	751	235	18	118	15.0	7,630
Republic:								
No additional rooms	12	41	1,189	311	28	109	25.70	14,010
Additional rooms	12	55	1,578	564	50	109	46.0	14,564
Rice:								
No additional rooms	8	46	1,399	212	18	70	25.7	10,092
Additional rooms	10	56	1,652	276	24	70	34.2	12,951

TABLE No. XXXIV—Continued

County.	Coöperative School Areas.			One-teacher schools included in Coöperative School Areas.		Number of one-teacher schools in county.	Percentage of all one-teacher schools included in Coöperative Areas.	Total reduction in cost.
(1)	Number of schools. (2)	Number of teachers. (3)	Total enrollment. (4)	Number of pupils. (5)	Number of schools. (6)	(7)	(8)	(9)
Riley:								
No additional rooms	12	70	2.082	249	20	71	28.0	$10,115
Additional rooms	12	73	2,199	359	30	71	42.0	7,022
Rooks:								
No additional rooms	6	26	640	98	11	89	12.3	5,937
Additional rooms	6	27	655	113	12	89	13.4	4,247
Scott:								
No additional rooms	4	19	566	67	5	25	20.0	2,557
Additional rooms	4	20	591	92	6	25	24.0	1,925
Stafford:								
No additional rooms	5	25	688	90	10	77	13.0	6,792
Additional rooms	5	39	1,126	208	21	77	27.3	4,816
Stanton	none	....	....	....	....	15	....	....
Stevens	none	....	....	....	....	32	....	....
Sumner:								
No additional rooms	12	88	2,704	391	38	151	25.0	22,719
Additional rooms	12	92	2,794	481	47	151	31.0	23,796
Thomas:								
No additional rooms	1	4	93	13	1	41	2.4	420
Trego:								
No additional rooms	1	3	73	12	2	55	3.6	1,348
Wabaunsee:								
No additional rooms	4	13	....	26	3	76	4.0	1,757
Additional rooms	4	14	313	99	10	76	13.0	2,672

TABLE No. XXXIV—CONCLUDED

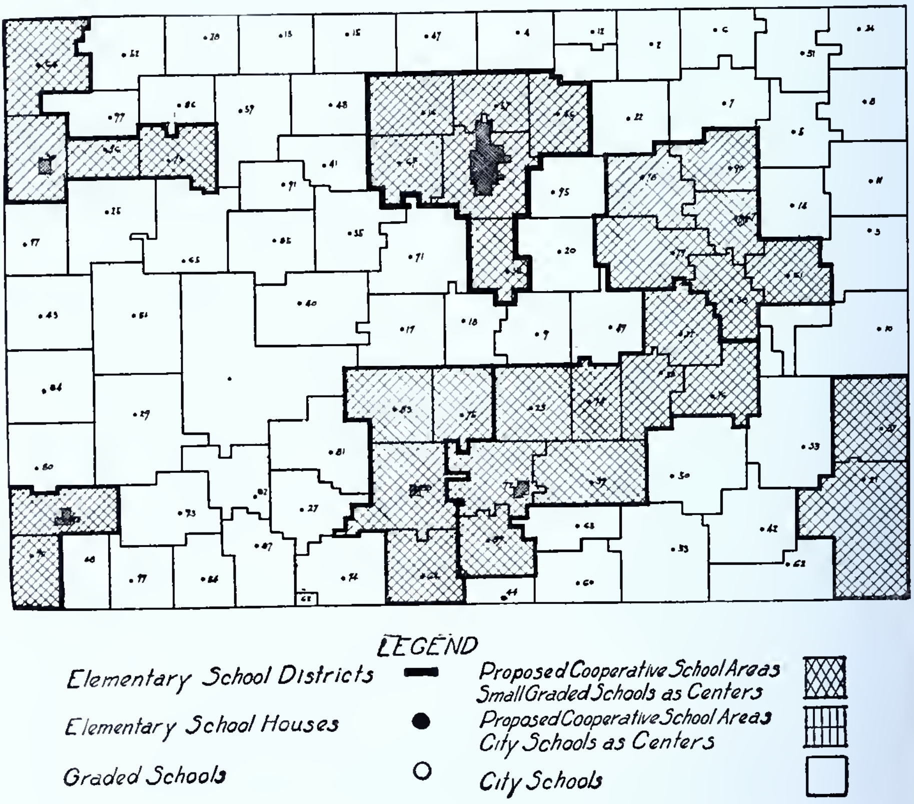
COUNTY. (1)	Coöperative School Areas:			One-teacher schools included in Coöperative School Areas.		Number of one-teacher schools in county. (7)	Percentage of all one-teacher schools included in Coöperative Areas. (8)	Total reduction in cost. (9)
	Number of schools. (2)	Number of teachers. (3)	Total enrollment. (4)	Number of pupils. (5)	Number of schools. (6)			
Wallace:								
No additional rooms	1	8	158	4	1	21	5.0	$513
Wichita	none					32		
Wilson:								
No additional rooms	6	46	1,395	222	19	80	23.7	8,609
Additional rooms	6	48	1,486	313	23	80	28.7	7,784
Woodson:								
No additional rooms	3	20	453	42	5	67	7.5	2,543
Additional rooms	3	26	629	107	11	67	16.4	2,457
Total for all counties:								
No additional rooms	283	1,511	43,865	7,162	669	4,535	14.7	$328,336
Additional rooms	291	1,680	48,827	9,645	873	4,535	19.2	323,324

Summary

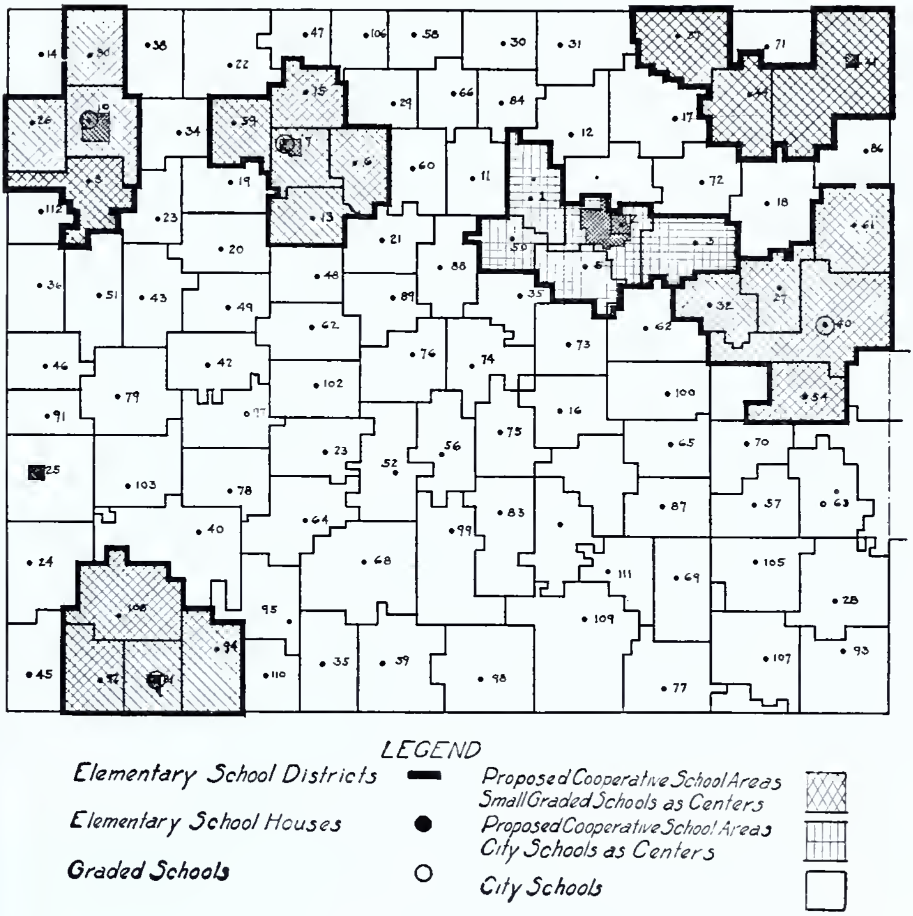
A summarization of the data in Table XXXV shows that in 59 of these 64 counties, without the addition of a single new classroom, 283 Coöperative School Areas could have been organized for the school year 1930-1931 in which 7,162 pupils from 669 one-teacher schools could have been accommodated who otherwise attended one-teacher schools. These respective numbers represent 14.7 per cent of the total number of one-teacher schools and 11 per cent of the total number of pupils attending one-teacher schools in the 64 counties included in the study. A reduction of $328,336 in costs would have resulted from the organization of these Coöperative School Areas. This is equal to a reduction in costs of $45.84 for each of the one-teacher pupils who would have attended the coöperative schools. The average cost per pupil for pupils enrolled in the one-teacher schools of these counties was $59. If a few one-teacher school buildings had been moved to the sites of small graded schools, 291 Coöperative School Areas could have been organized, accommodating 9,645 pupils from 873 one-teacher schools. These numbers represent 19.2 per cent of the one-teacher schools and 15.6 per cent of the total number of pupils attending one-teacher schools in these sixty-four counties during the school year 1929-1930. The reduction in costs would have been $323,324.

Map I shows the counties included in this study. Maps II to XI inclusive show the possible results of the organization of Coöperative School Areas in ten different counties.

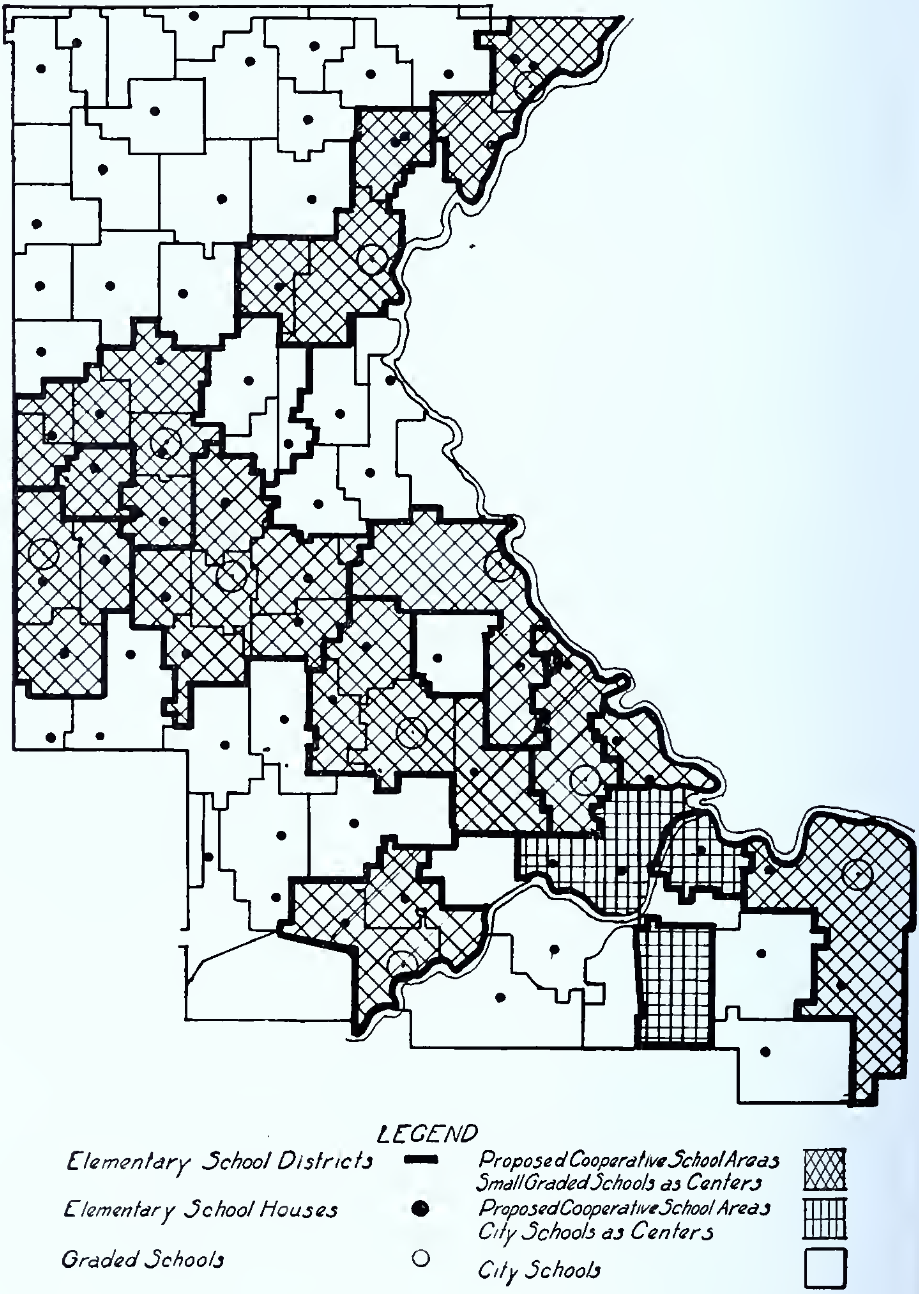
Map II—Kingman County, Kansas, School Districts


LEGEND
Elementary School Districts
Elementary School Houses
Graded Schools
Proposed Cooperative School Areas Small Graded Schools as Centers
Proposed Cooperative School Areas City Schools as Centers
City Schools

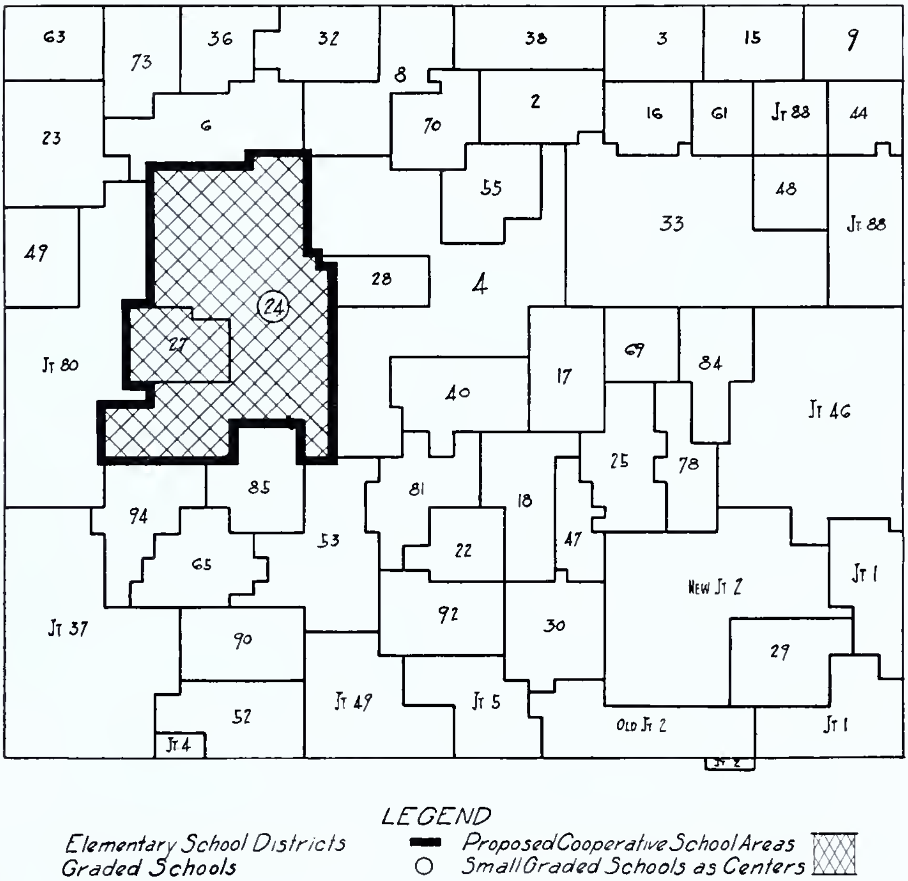
Map III—Mitchell County, Kansas, School Districts

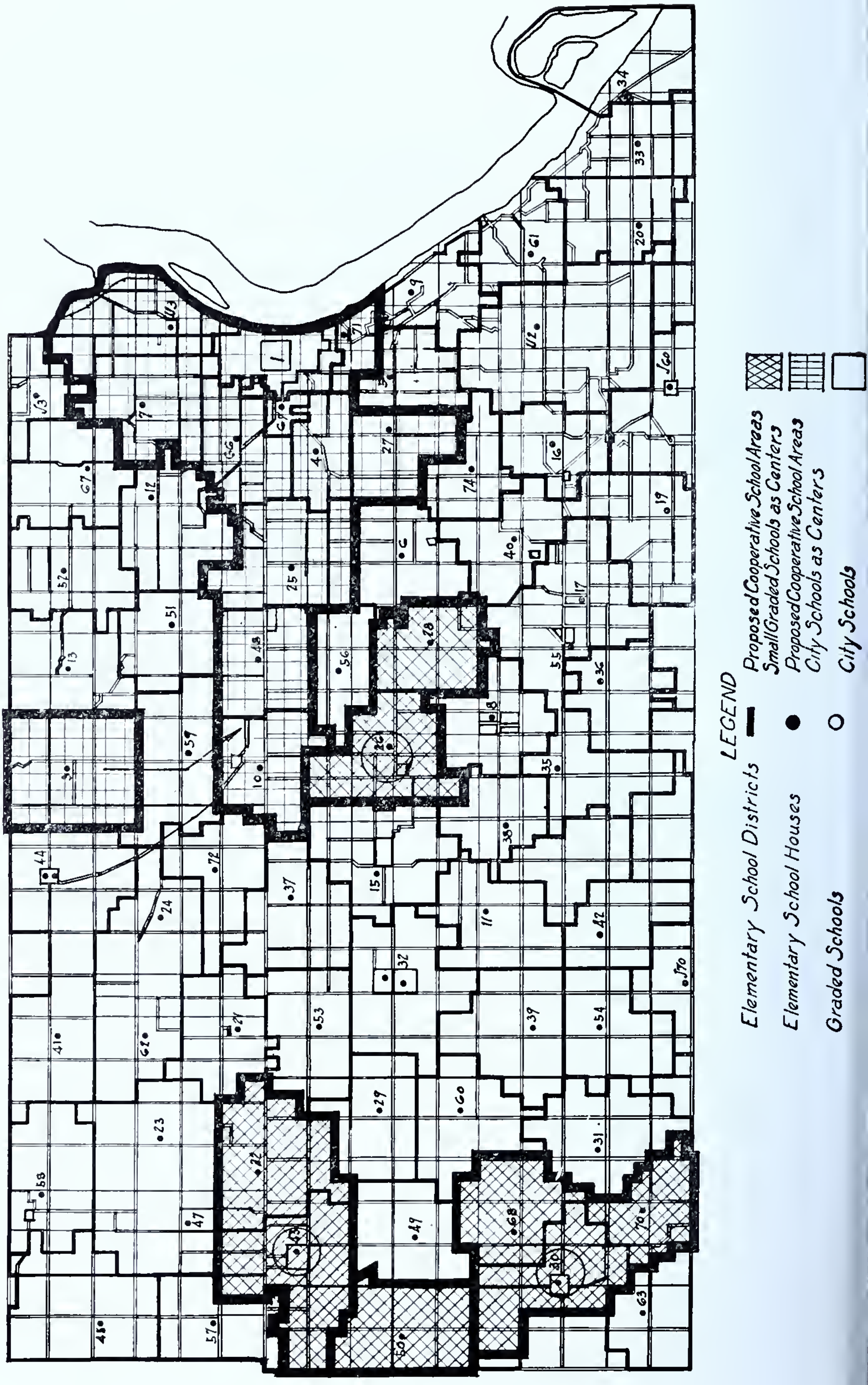

LEGEND
Elementary School Districts
Elementary School Houses
Graded Schools
Proposed Cooperative School Areas Small Graded Schools as Centers
Proposed Cooperative School Areas City Schools as Centers
City Schools

MAP IV—Riley County, Kansas, School Districts


LEGEND
Elementary School Districts
Elementary School Houses
Graded Schools
Proposed Cooperative School Areas Small Graded Schools as Centers
Proposed Cooperative School Areas City Schools as Centers
City Schools

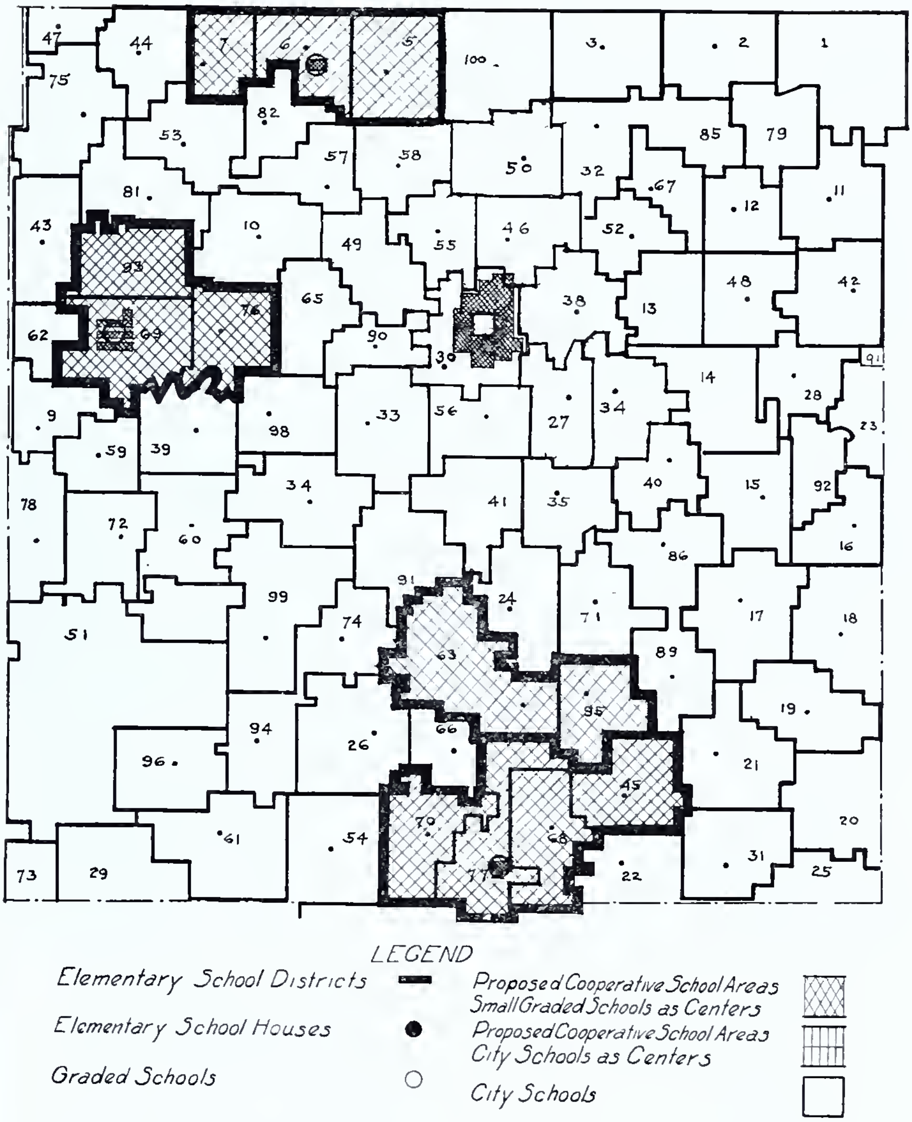
Map V—Thomas County, Kansas, School Districts



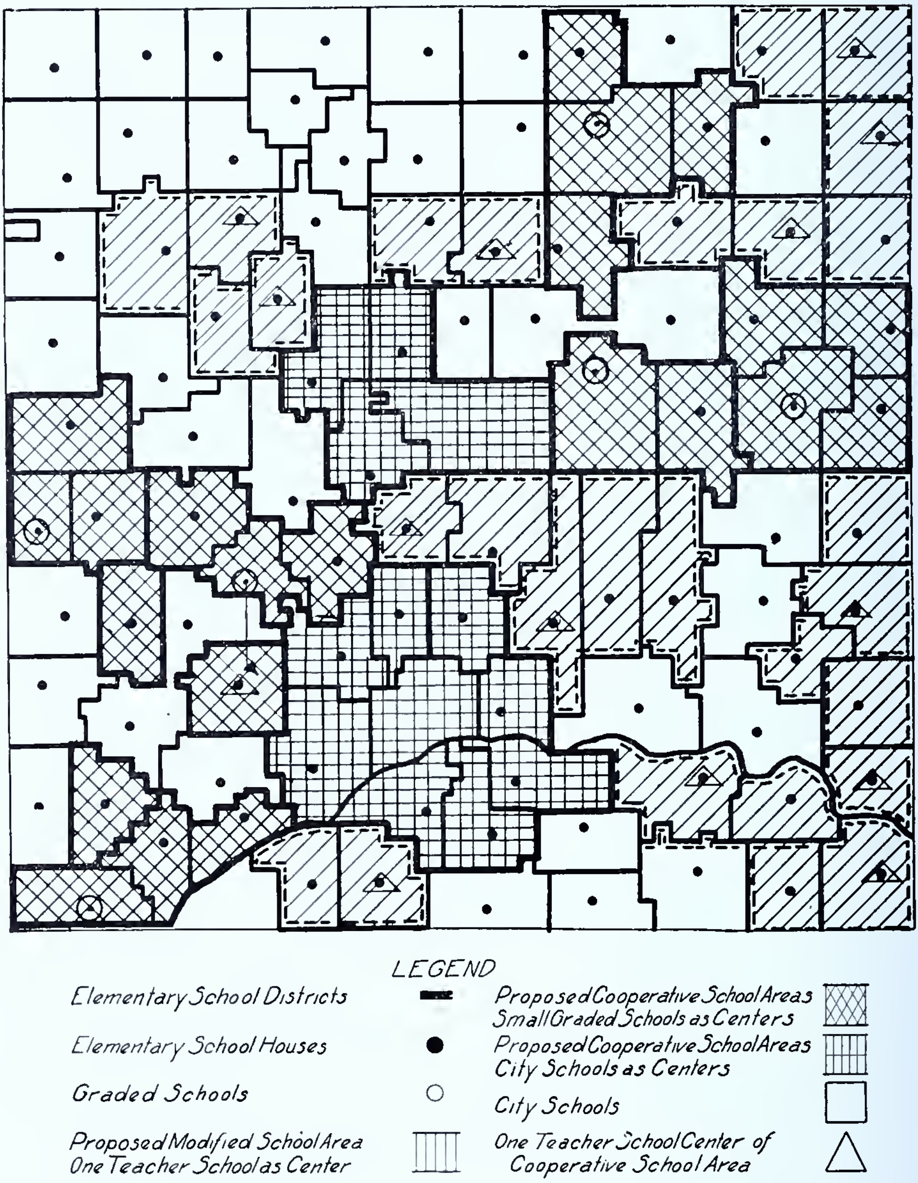

LEGEND
Elementary School Districts
Elementary School Houses
Graded Schools
Proposed Cooperative School Areas Small Graded Schools as Centers
Proposed Cooperative School Areas City Schools as Centers
City Schools

Map VI—Atchison County, Kansas, School Districts

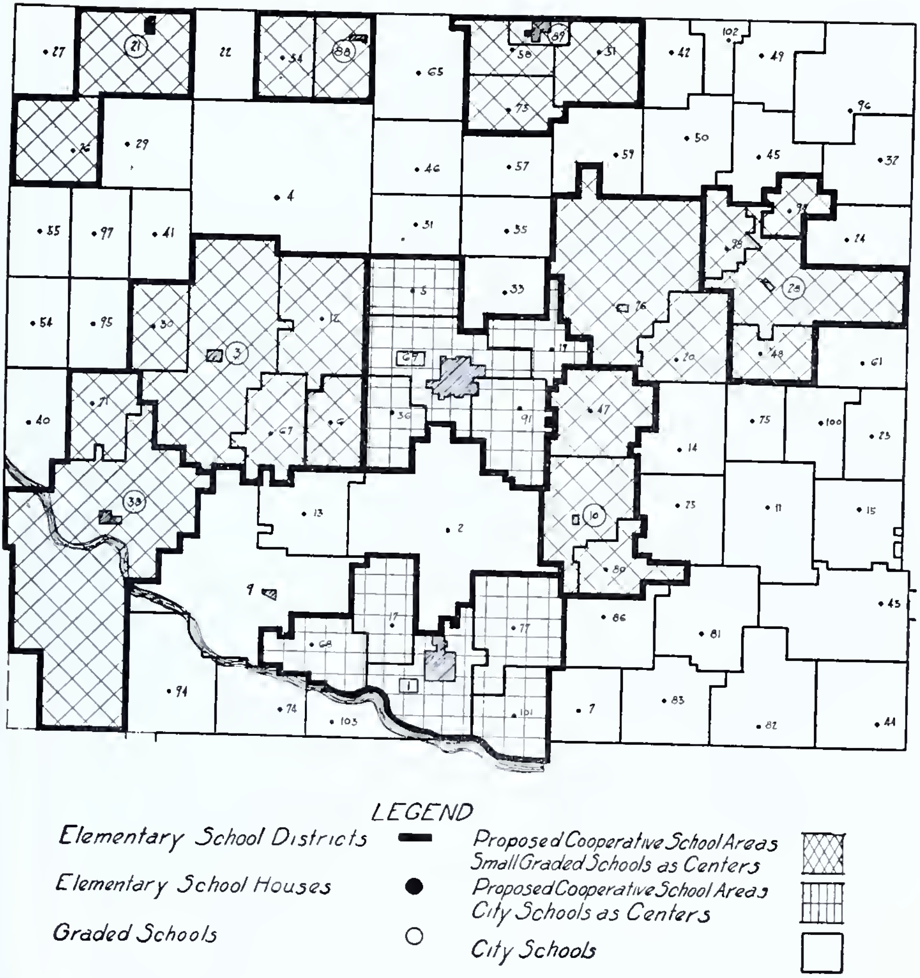
Map VII—Franklin County, Kansas, School Districts


LEGEND
Elementary School Districts
Elementary School Houses
Graded Schools
Proposed Cooperative School Areas Small Graded Schools as Centers
Proposed Cooperative School Areas City Schools as Centers
City Schools

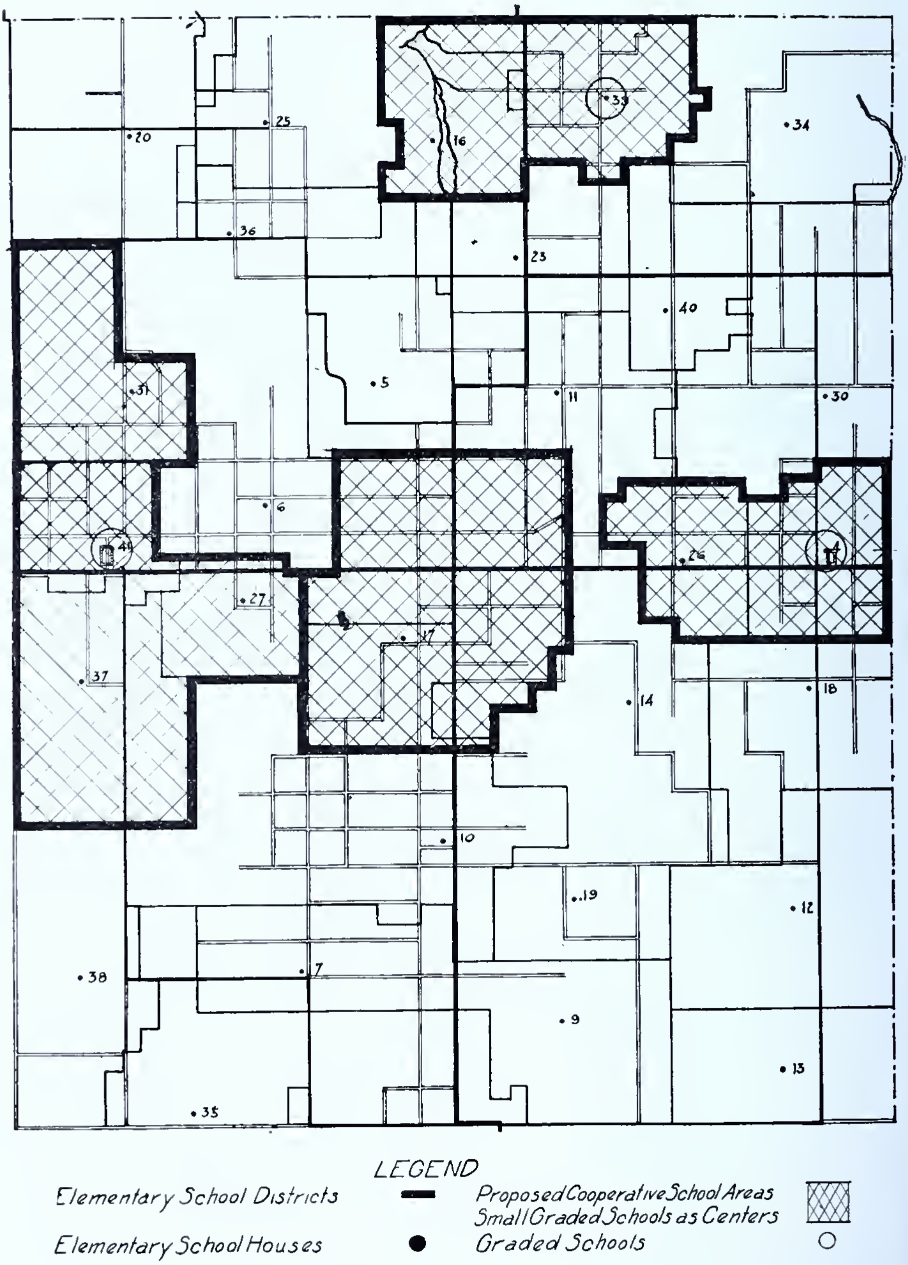
Map VIII—Barton County, Kansas, School Districts


LEGEND
Elementary School Districts
Elementary School Houses
Graded Schools
Proposed Modified School Area One Teacher School as Center
Proposed Cooperative School Areas Small Graded Schools as Centers
Proposed Cooperative School Areas City Schools as Centers
City Schools
One Teacher School Center of Cooperative School Area

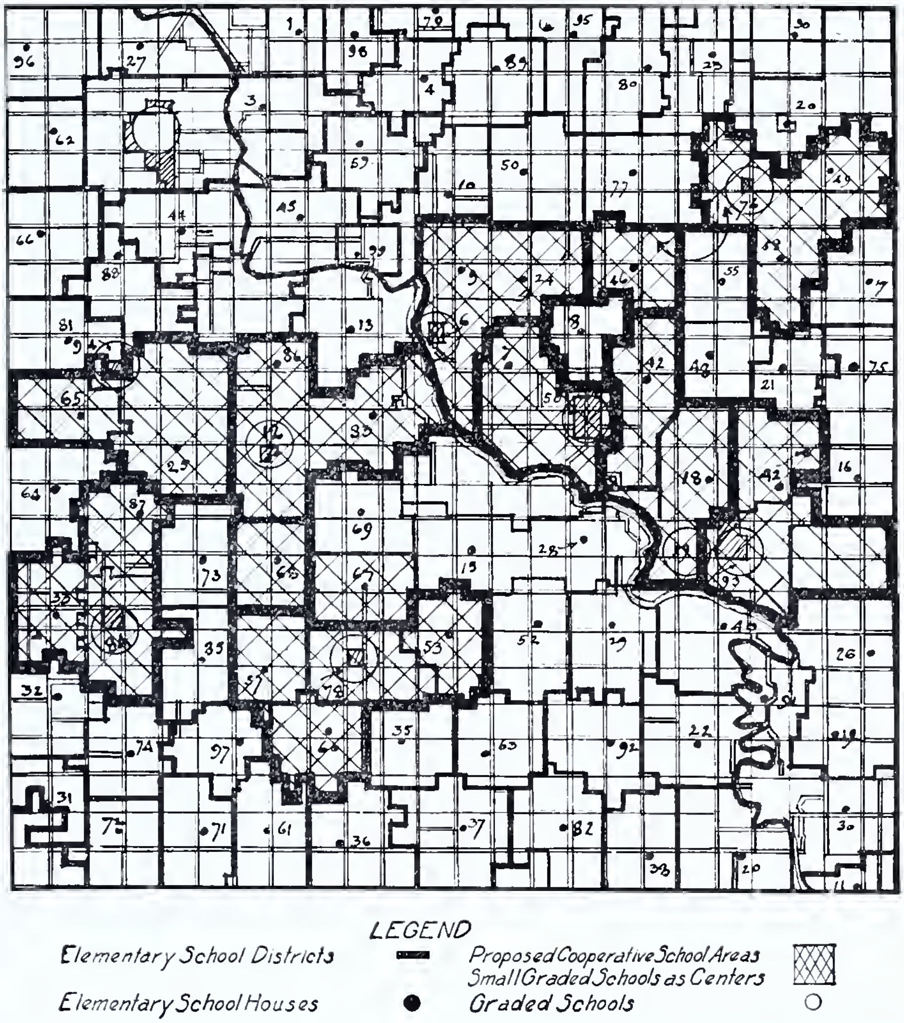
Map IX—Rice County, Kansas, School Districts


LEGEND
Elementary School Districts
Elementary School Houses
Graded Schools
Proposed Cooperative School Areas Small Graded Schools as Centers
Proposed Cooperative School Areas City Schools as Centers
City Schools

Map X—Scott County, Kansas, School Districts



Map XI—Neosho County, Kansas, School Districts


LEGEND
Elementary School Districts ▬
Proposed Cooperative School Areas Small Graded Schools as Centers ▨
Elementary School Houses ●
Graded Schools ○

CHAPTER VIII

Modified Coöperative School Area

The coöperative school of a Coöperative School Area would be a graded school. It would be possible, however, for two or more one-teacher districts to coöperate in the organization of a modified Coöperative School Area in which a one-teacher school would become the coöperative school. The procedures and techniques developed for the organization of a Coöperative School Area would be employed in doing so just in so far as they would be applicable. The significant ones would be:

1. The method of determining transportation costs.
2. The method of determining strictly educational costs.
3. The method of dividing costs among the several districts included.
4. The same legal procedures.
5. The method of determining the maximum enrollment as derived from the judgments of the jurors. For a one-teacher school this has been found to be 28.

To illustrate the results of the organization of such Modified Coöperative School Areas, the application of these techniques and procedures will be demonstrated for two counties. The results are shown in Table XXXV and Table XXXVI.

TABLE XXXV—Modified Coöperative School Areas in Barton county

SCHOOL.	Number of pupils.	Distance from Coöperative School.	Total expenditures.	Cost of school.		Reduction of costs.	
				Transportation.	Strictly educational.	In dollars.	Percentage.
No. 60	10		$970				
No. 53	8	3.5 mi.	1,043				
Modified Coöperative School	18		1,328	$223	$1,043	$747	37
No. 63	2	4.0 mi.	875				
No. 75	18		1,120				
Modified Coöperative School	20		1,328	208	1,120	667	33
No. 82	14	3.0 mi.	1,081				
No. 52	3		726				
No. 22	10	2.0 mi.	1,238				
Modified Coöperative School	27		1,878	640	1,238	1,171	38
No. 9	5	3.0 mi.	1,066				
No. 30	9		1,198				
Modified Coöperative School	14		1,414	216	1,198	850	37
No. 49	8	2.5 mi.	932				
No. 47	20		1,134				
Modified Coöperative School	28		1,342	208	1,134	724	35
No. 38	12		1,131				
No. 24	11	3.0 mi.	1,014				
Modified Coöperative School	23		1,483	352	1,131	662	30
No. 13	5	2.5 mi.	757				
No. 10	9		1,081				
No. 57	6	3.5 mi.	780				
Modified Coöperative School	20		1,613	532	1,081	925	36
No. 26	13	3.0 mi.	1,366				
No. 46	11		1,141				
Modified Coöperative School	24		1,718	352	1,366	789	31

TABLE XXXV—Concluded

School.	Number of pupils.	Distance from Coöperative School.	Total expenditures.	Cost of school.		Reduction of costs.	
				Transportation.	Strictly educational.	In dollars.	Percentage.
No. 12	16	4.0 mi.	$1,162				
No. 19	6		973				
Modified Coöperative School,	22		1,578	$416	$1,162	$557	26
No. 76	5	3.0 mi.	960				
No. 72	16		1,575				
Modified Coöperative School,	21		1,791	216	1,575	744	29
No. 85	7	4.0 mi.	1,212				
No. 87	16		1,225				
Modified Coöperative School,	23		1,486	261	1,225	951	39
No. 21	9	2.5 mi.	976				
No. 56	13		1,106				
Modified Coöperative School,	22		1,314	208	1,106	768	35
No. 7	8	4.5 mi.	1,030				
No. 28	13		1,282				
Modified Coöperative School,	21		1,560	278	1,282	752	32
No. 88	11		827				
No. 96	12		952				
Modified Coöperative School,	23		1,368	416	952	411	23

SUMMARY FOR BARTON COUNTY

Number of Modified Coöperative School Areas	14
Number of One-teacher Schools Included	30
Number of One-teacher Schools Which Could Be Closed	16

Total Reduction in Costs, $10,818.

TABLE XXXVI—Modified Coöperative School Areas in Riley county

SCHOOL.	Number of pupils.	Distance from Coöperative School.	Total expenditures.	Cost of school.		Reduction of costs.	
				Transportation.	Strictly educational.	In dollars.	Percentage.
Jt. 49	11	2.5 mi.	$796				
Jt. 15	17		1,022				
Modified Coöperative School,	28		1,342	$320	$1,022	$476	26
No. 50	9	2.25 mi.	817				
No. 67	12		956				
Modified Coöperative School,	21		1,260	304	950	513	29
No. 28	10	4.0 mi.	1,004				
No. 25	11		1,158				
Modified Coöperative School,	21		1,454	296	1,158	708	49
No. 80	5	3.0 mi.	1,137				
No. 57	10		646				
Modified Coöperative School,	15		1,353	216	1,137	430	24
Jt. 13	11		1,217				
Jt. 3	8	2.0 mi.	975				
Modified Coöperative School,	19		1,407	190	1,217	785	35
Jt. 11	11	2.5 mi.	774				
No. 71	12		902				
Modified Coöperative School,	23		1,222	320	902	454	27
Jt. 64	19		1,109				
No. 33	8	4.5 mi.	830				
Modified Coöperative School,	27		1,387	278	1,109	552	28
No. 41	14		1,054				
No. 60	8	4.5 mi.	682				
Modified Coöperative School,	22		1,332	278	1,054	404	23
No. 32*		3.5 mi.	49				
No. 65*			718				
Modified Coöperative School*			767				

* Operated as a Modified Coöperative School Area during 1930-1931.

SUMMARY FOR RILEY COUNTY

Eighteen schools could have coöperated in the organization of nine Modified Coöperative School Areas with a reduction in costs of $4,322. Other one-teacher districts which might have been combined into Modified Coöperative School Areas were included in the Coöperative School Areas.

CHAPTER IX

Summary and Recommendations

This study began with a statement of the inconsistency between the existence of a large number of inefficient small one-teacher schools in Kansas and their relatively high costs. It was shown also that a large number of small graded schools in the state could probably accommodate many of the pupils attending one-teacher schools located within a radius of five miles of them. While the consolidation of school districts is probably the most educationally justifiable solution for present conditions, an examination of the history of and attitude toward consolidation of schools in Kansas indicates that educational opportunities for Kansas farm children will probably not be greatly improved in the near future through the consolidation of the one-teacher districts. The question was raised whether "there is any other available and feasible method for securing some of the desirable results of larger school organizations for farm boys and girls."

Criteria to determine the acceptability of any suggested plan for achieving these results were formulated and the Coöperative School Area as described in the study was proposed as a plan of organization which would conform to the criteria. Techniques and procedures for the organization of such areas have been developed and applied in sixty-four counties. This application has demonstrated that in these counties, which represent 60 per cent of the 105 counties of the state, at least 283 Coöperative School Areas could have been organized, including 669 one-teacher districts, without the addition of a single new classroom. In the coöperative schools of the Coöperative School Areas, 7,162 farm children could have been given the advantages of graded schools. This number represents 11 per cent of the pupils attending one-teacher schools in these respective counties. A reduction of $328,336 in costs would have resulted from the organization of the Coöperative School Areas. If a few additional classrooms had been provided, 291 Coöperative School Areas could have been organized, including 873 one-teacher districts in which 9,645 pupils from one-teacher schools could have been accommodated. This number represents 15.6 per cent of all pupils attending one-teacher schools for the school year considered in the study, 1930-1931. A reduction of $323,324 in costs would have ensued from these organizations.

The employment of the techniques and procedures developed for the organization of Coöperative School Areas for the organization of Modified Coöperative School Areas, in which a one-teacher school would become the coöperative school, has likewise been demonstrated. A further extensive study might very well be conducted to determine satisfactory maximum and minimum enrollments for one-teacher schools.

This study is concerned primarily with elementary education. A similar study could well be conducted to determine the possibility of reducing the number of small high schools and to develop the techniques and procedures for doing so. Of such schools in 1932 there were 369, or 63 per cent of all high schools in the state, with an enrollment of 75 or fewer pupils. Of these, 171 or 29 per cent of all high schools employed three or fewer teachers.

The study has also shown the desirability of repealing the present statute which compels the disorganization of a one-teacher district lying adjacent to another school district which maintains a graded school and a high school with a term of at least two years in length if the one-teacher district fails to maintain a school for any consecutive three-year period.

A second legal enactment should provide for the temporary closing of a one-teacher school and the transporting of pupils to the school of an adjacent district upon petition by the parents of two-thirds of the pupils subject to the compulsory school attendance laws or by the owners of two-thirds of the taxable property of the district provided arrangements could be made with the adjacent district to accommodate the pupils, and provided the costs of educating the pupils in the school of the adjacent district would not exceed that which would be incurred by maintaining the one-teacher school.

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APPENDIX

Information Concerning Small Graded and One-teacher Schools

STATE OF KANSAS
DEPARTMENT OF EDUCATION
(All information is for last year)

FOR GRADE SCHOOL ONLY

NAME OF SCHOOL.	Number of district.	Number of grade teachers.	Number of months in school year.	Total daily attendance.	Total enrollment.	Total amount expended.	Expended for current expenses.

FOR ONE-ROOM SCHOOLS NOT MORE THAN FIVE MILES FROM ABOVE GRADED SCHOOL

NAME OF SCHOOL.	Number of district.	Total daily attendance.	Number of months in school year.	Number of pupils enrolled.	Total amount expended.	Expended for current expenses.	Expended for indebtedness.

FOR GRADE SCHOOL ONLY

Expended for indebtedness.	Average annual salary for teachers.	Average years of experience of teachers.	Average number of college hours training of teachers.	Number of vacant rooms.	Number of teachers.	

FOR ONE-ROOM SCHOOLS NOT MORE THAN FIVE MILES FROM ABOVE GRADED SCHOOL

Number miles from graded school.	Kind of road to graded school.*	Annual salary of teacher.	Years of experience of teacher.	Number of college hours training of teacher.		

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* Gravel, sand, concrete, brick, improved dirt, or unimproved dirt.

INQUIRY ON TEACHER-PUPIL RATIO

(Used by Superintendents of County and City Schools)

October 21, 1932.

In attempting to find a procedure for improving rural education I find it necessary to know what should be the maximum number of children who should be assigned to a teacher caring for from one to eight grades. Because your experience and background qualify you to answer this question with a high degree of accuracy, I very much desire to have your judgment in the matter. I hope you will find it possible to supply the information requested below.

This communication is being addressed to a large number of educational workers. The summary of their opinions should have real practical value in the administration of education. If you care for a report of the findings, I shall be pleased to mail you a copy. I wish to assure you that I shall very much appreciate your assistance in this matter. May I have your reply at your earliest convenience?

Do you wish a report of the findings? ———

Sincerely yours,
W. E. Sheffer.

In determining your replies, please take into consideration:

(1) The present Kansas State Course of Study.
(2) The ability of Kansas to support education.
(3) The well-being of the pupils.
(4) The well-being of the teachers.

In your judgment what is the *maximum* number of pupils who should be assigned to a teacher if she has the number of grades in her room indicated below A, B, C, D, etc. Please draw a *circle* around the proper number in each column. By maximum is meant the largest number of pupils who can be taught satisfactorily. Please encircle one number in every column. If you think less than 20 or more than 40 pupils should be assigned, write the number you prefer on the blank line in each column.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
Grades 1 and 2....	Grades 3 and 4....	Grades 5 and 6....	Grades 7 and 8....	Grades 1-2-3.....	Grades 4-5-6.....	Grades 1-2-3-4....	Grades 5-6-7-8....	Grades 1-2-3-4-5-6-7-8..	Grade 1......	Grade 2......	Grade 3......	Grade 4......	Grade 5......	Grade 6......	Grade 7......	Grade 8......
20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23
24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27
28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29
30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33
34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34
35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35
36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36
37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37
38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38
39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39
40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40

How many elementary teachers in your school? ....

For how many years have you been engaged in educational work?........................

For how many years have you been engaged in rural-school work, as teacher? .... As principal or superintendent?.............................. As county superintendent? ....

What college degrees do you hold? .... When granted? ....

How many college hours have you completed if you do not hold a degree? ....

How many college hours of work in education have you completed since January 1, 1932? ....

Position.. Name..

Address ....

BLANK SUBMITTED TO DIRECTORS OF TEACHER TRAINING

(Blank submitted to directors of teacher training in Kansas colleges for an expression of judgment relative to the maximum enrollment in elementary schools employing different numbers of teachers.)

February, 1, 1933.

Dear Sir or Madam—In conducting a study of what should be maximum *enrollments* for graded schools in Kansas I very much desire to have the judgments of professional workers with your training and experience.

Will you please supply the information requested in the blanks below?

I wish to assure you that I shall very deeply appreciate your assistance in this matter. May I add that I am conducting the study with the coöperation of the Kansas State Department of Public Instruction.

Sincerely yours,

W. E. Sheffer.

In your judgment should the maximum *enrollment* for an elementary school, including Grades I to VIII, inclusive, be greater than, less than, or the same as—

57 pupils for a 2-teacher school?——— What should it be?———
76 pupils for a 3-teacher school?——— What should it be?———
113 pupils for a 4-teacher school?——— What should it be?———
153 pupils for a 5-teacher school?——— What should it be?———
177 pupils for a 6-teacher school?——— What should it be?———
219 pupils for a 7-teacher school?——— What should it be?———
243 pupils for an 8-teacher school?——— What should it be?———
271 pupils for a 9-teacher school?——— What should it be?———
300 pupils for a 10-teacher school?——— What should it be?———
319 pupils for an 11-teacher school?——— What should it be?———
356 pupils for a 12-teacher school?——— What should it be?———
396 pupils for a 13-teacher school?——— What should it be?———
420 pupils for a 14-teacher school?——— What should it be?———
462 pupils for a 15-teacher school?——— What should it be?———
486 pupils for a 16-teacher school?——— What should it be?———

....	....	....
(Address)	(Official Position)	(Signature)

BLANK SUBMITTED TO STATE DEPARTMENTS OF PUBLIC INSTRUCTION

(Blank submitted to State Departments of Public Instruction relative to the maximum enrollments in elementary schools employing different numbers of teachers.)

February 1, 1933.

State Superintendent of Public Instruction:

Dear Sir—With the coöperation of the State Department of Public Instruction of Kansas I am making a study of methods for reducing the number of small one-teacher schools. In doing this I find it desirable to know what are the experiences of other states in the same field of action. Will you please supply the information requested below for your state?

In doing this I can assure you that you will be assisting in the solution of a very serious problem in our state. How serious is the matter you can judge from the fact that twelve of every thirteen farm boys and girls are receiving their elementary education in one-teacher schools.

The Kansas State Department of Public Instruction and I shall very deeply appreciate your assistance in this matter.

Sincerely yours,

W. E. Sheffer.

1. Does your state set a desirable maximum *enrollment* for schools of different sizes? ....

2. If the answer to (1) is "yes," please fill in this table:

Size of School.	Maximum enrollment recommended or prescribed.	Recommended or prescribed?	Authority making recommendation or prescription.[1]	Document in which can be found rule or regulation on the subject.[2]
1-teacher...				
2-teacher...				
3-teacher...				
4-teacher...				
5-teacher...				
6-teacher...				
7-teacher...				
8-teacher...				
9-teacher...				
10-teacher...				
11-teacher...				
12-teacher...				
13-teacher...				
14-teacher...				
15-teacher...				
16-teacher...				

Notes: 1. Legislature—state superintendent—state board of education, etc.
2. Laws—state department regulations—state department bulletin, etc.

3. Is the public school system of your state organized on the district, county, state-wide, or some other basis? ....

4. Does your state have provision for closing one-teacher schools by consolidation by which is meant the merging of two or more separate districts into one single new district? ....

5. Does your state have provision for closing one-teacher schools temporarily by having their children taught in another district which the home district of the children so taught pays for their instruction? ....

6. If the answer to (5) is "yes," what are the arrangements? ....
....

7. If the answer to (5) is "yes," how many one-teacher schools were closed by this method in 1931-1932? ....

8. Please give the citation to the laws or regulations where the provision for closing one-teacher schools by this method may be found..............................
....

9. Will you please have the best qualified person in your department fill in the inclosed blank also.

....	....	....
(State)	(Official Position)	(Signature)

BLANKS FOR REPORTING COSTS OF TRAVEL USED BY KANSAS TEACHERS OF VOCATIONAL AGRICULTURE FOR THIS STUDY

Kansas State Board for Vocational Education, Topeka

February 1, 1933.

1. What make of car did you use prior to the purchase of the car you are now using? ....
2. Type of car (underscore): roadster, coupé, coach, sedan, touring.
3. Number of miles operated before sold or traded for present car..............................
4. What allowance was made on it toward payment for present car? ....
5. Give approximate date of purchase of present owned car ....
6. Give approximate date of purchase of previously owned car ....
7. If above data on old car are not available, please supply the following information:
    - *a.* Make of present car ....
    - *b.* Type of present car: coach, sedan, roadster, coupé, touring.
    - *c.* Number of miles it has been operated ....
    - *d.* What allowance would probably be made on it were it traded in on a new car? ....
8. What do your operating costs average per mile? ....
    - *a.* Please indicate length of time for which you have calculated costs of operation ....
    - *b.* Please indicate which of the following items you have included in giving the per-mile cost. If you have data for cost of each item per mile, please supply it.

Gasoline	Insurance:
Oil..............................	Fire..............................
Grease	Theft ....
Tires..............................	Collision ....
Repairs	

....	....
(School)	(Date)
	....
	(Signature of Teacher)

BLANK FOR REPORTING TRANSPORTATION COSTS IN KANSAS CONSOLIDATED SCHOOLS

TRANSPORTATION COSTS 1930-'31 AND 1931-'32 DATE

	Original cost of bus.	Drivers' monthly salary.		Days operated.		Average number pupils carried.		Total miles traveled.	
		1930-'31.	1931-'32.	1930-'31.	1931-'32.	1930-'31.	1931-'32.	1930-'31.	1931-'32.
Bus No. 1									
No. 2									
No. 3									
No. 4									
No. 5									
No. 6									
No. 7									
No. 8									
No. 9									
No. 10									

COSTS OF OPERATION

Total costs of all busses operated:

	1930–1931	1931–1932
1. Gasoline		
2. Oil		
3. Grease		
4. Tires		
5. Maintenance and repairs		
6. Garage		
Total		

Kind of busses used:

Name of school Signature Position

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TOPEKA 1934

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VITA

W. E. Sheffer, born at Lamartine, Pennsylvania, in 1888, received the A. B. degree from Allegheny College in 1912. He attended the University of Chicago during four summer terms, and Teachers College, Columbia University, during five summer terms and the academic year of 1932-1933. From Teachers College he received the A. M. degree in 1928.

He has taught in the elementary schools of Pennsylvania, the Georgia Military Academy of College Park, Georgia, and in summer sessions of the Fort Hays State College and the Kansas State College of Agriculture and Applied Science. He served as principal of the Lincoln, Kansas, High School; as superintendent of the Lincoln Public Schools; as superintendent of the Concordia, Kansas, Public Schools; and from 1926 as superintendent of the Manhattan, Kansas, Public Schools, from which position he was on leave of absence during 1932-1933.

For the report of the State School Code Commission of Kansas in 1929 he wrote the section on "The Present Status of State Departments of Education," and for the Handbook of Kansas Social Resources, published in 1932, the section on "Financial Considerations Affecting Public Education in Kansas." He collaborated in the writing of Practical Economics in School Administration, and has also contributed articles to professional educational magazines.